

AMERICAN ARTISAN

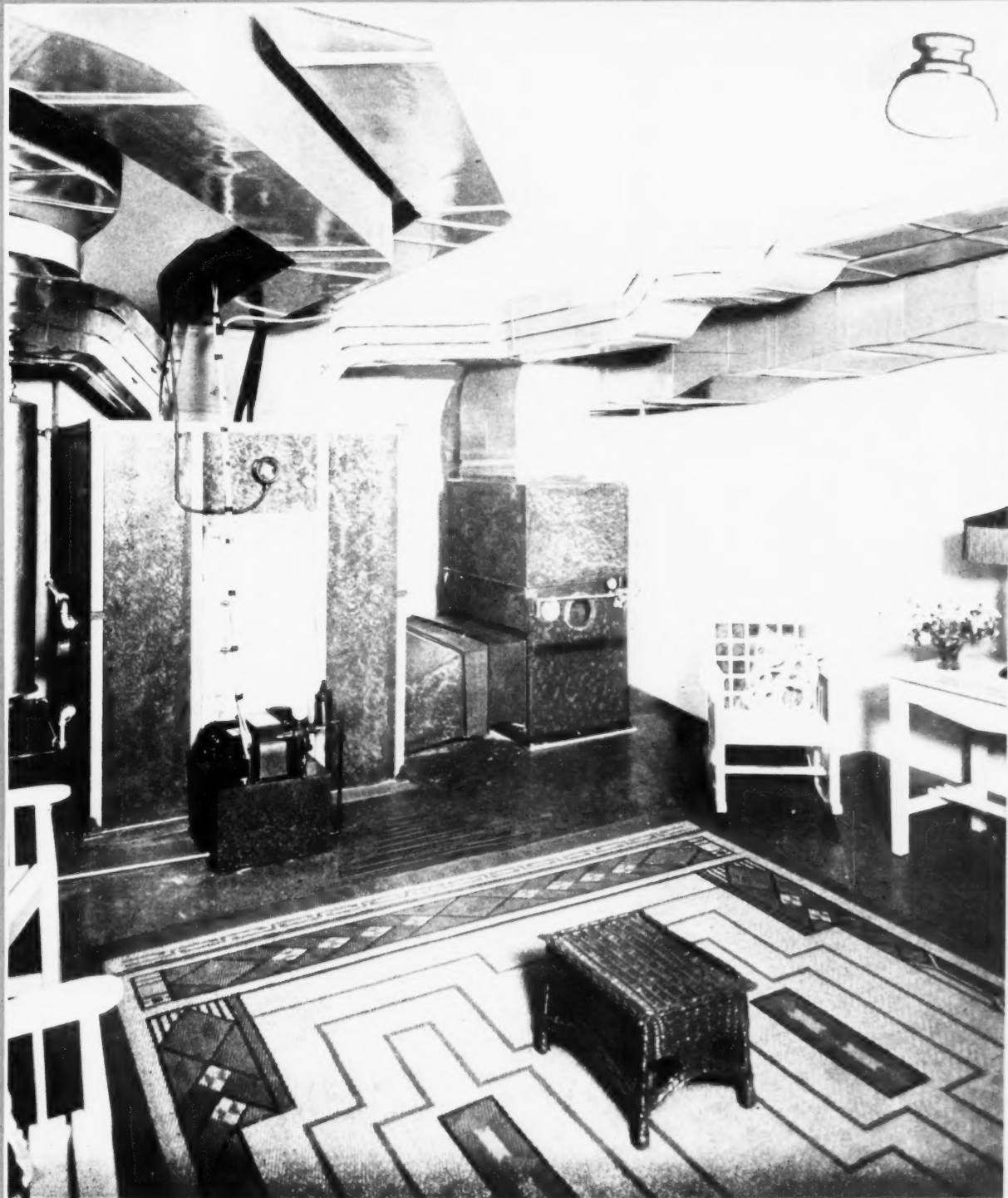
WARM AIR HEATING • SHEET METAL
CONTRACTING • AIR CONDITIONING

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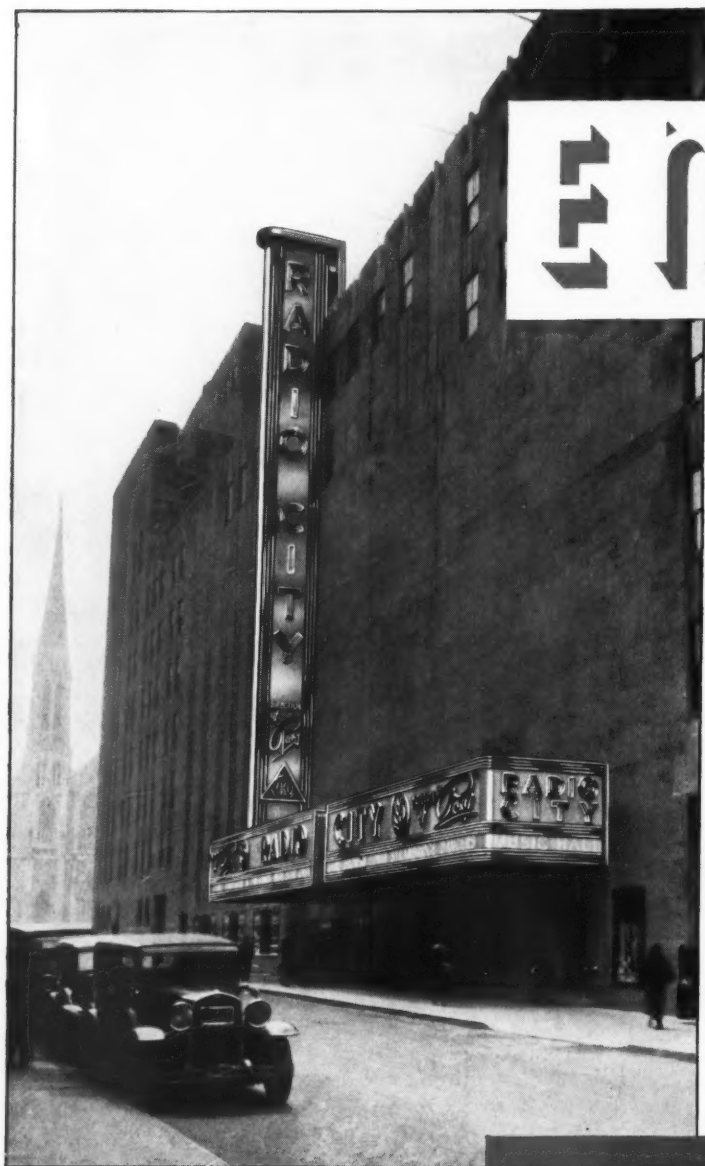
arm-Air
heating



PUBLISHED
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OCTOBER
1933

AMERICAN ARTISAN



ENDURO

GIVES SPECTACULAR DISPLAY TO RADIO CITY MUSIC HALL

Architects—Reinhard & Hofmeister; Corbett, Harrison & MacMurray; Hood & Foulboux. Consulting Engineer—Clyde R. Place. Supervising Contractors—Todd & Brown. General Contractor—Hegeman-Harris Co. Sign Fabricator—United Signs Corporation, Long Island City.

ENDURO
REPUBLIC'S PERFECTED
STAINLESS STEEL

Not all of the beauty of Radio City Music Hall is on the inside. The main entrance on the 6th Avenue side and the

50th and 51st Street entrances are resplendent with signs and marquees of strikingly modernistic design and fabricated of flashing ENDURO, Republic's Perfected Stainless Steel.

More than twelve tons of ENDURO were required for this sparkling gem of the metal worker's art. The work was done by United Signs Corporation, Long Island City. And be-

cause ENDURO retains its original beauty and is highly resistant to corrosion, these ever-visible signs and marquees will stand as long as the building—a tribute to the fabricator's skill.

Sheet metal workers are daily finding new uses for this ever-lasting metal. Why not let us tell you how you can make new profits from this comparatively new metal—ENDURO?

*Licensed under Chemical Foundation
Patents Nos. 1316817 and 1339378.*

CENTRAL ALLOY DIVISION . . MASSILLON, OHIO

REPUBLIC STEEL CORPORATION

GENERAL OFFICES

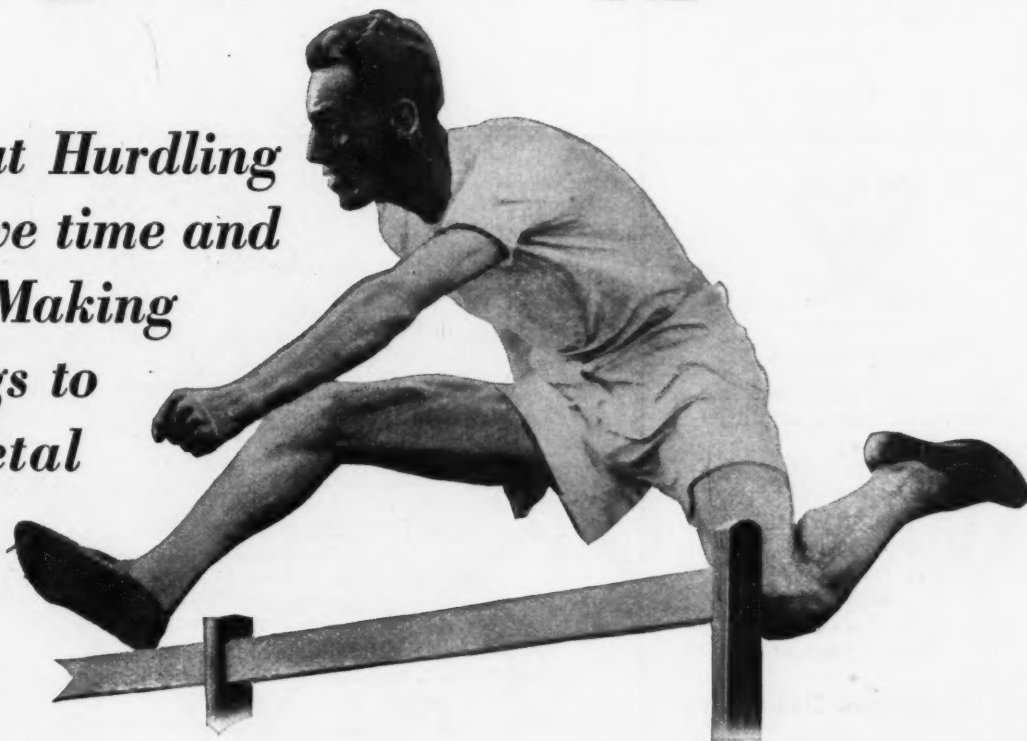


YOUNGSTOWN, OHIO

IT TAKES

Perfect Action

*-to win at Hurdling
-or to save time and
labor in Making
Fastenings to
Sheet Metal*



PLENTY of track men fail when it comes to hurdling. For it requires absolutely perfect action to clear every hurdle in the path. One spill may ruin the chances of winning.



Upon perfect action, also, depends savings in making fastenings to sheet metal. Trouble in using screws may mean an actual loss, instead of a reduction of the fastening time and labor. That's why it is so important to insist on genuine Sheet Metal Screws . . . made only by Parker-Kalon.

You can be sure of perfect action that invariably results in savings by using genuine Sheet Metal Screws. For they have the qualities that make them work right . . . every time. They *always* go in easily and quickly . . . form a perfect strong-holding thread in the metal . . . draw up tight without breaking. Low prices make it unnecessary to take chances with imitations.

PARKER-KALON CORPORATION
190 Varick Street New York, N. Y.



GENUINE PARKER-KALON
SHEET METAL SCREWS

HOLD . . . because the threads run full diameter right up to the head.

GO IN EASILY . . . because the threads are (1) designed with an expert knowledge of the work they must perform (2) held to a high degree of accuracy and uniformity.

THREADS DON'T STRIP—HEADS DON'T TWIST OFF because they are made from a high grade steel wire of special analysis, and are scientifically hardened by a process developed from 20 years experience in the manufacture of Self-tapping Screws.

PARKER-KALON
HARDENED ^{TYPE} SELF-TAPPING
Sheet Metal Screws
PATENTED—MIL. 1489148

Remember, there's only one Sheet Metal Screw, PARKER-KALON

Imitations give imitation results

Covering All Activities
in
Gravity Warm Air Heating
Forced Warm Air Heating
Sheet Metal Contracting
Air Conditioning
Ventilating
Roofing



Published Monthly by
Engineering Publications, Inc.
1900 Prairie Avenue, CHICAGO

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New York
Rooms 1706-1707
110 East 42nd Street
Pittsburgh
Room 604
Chamber of Commerce Bldg.

Copyright 1933 by
Engineering Publications, Inc.

Member of Audit Bureau of Circulation

Yearly Subscription Price — Anywhere in the world, \$2.00; Single Copies, \$25. Back numbers \$50. Entered as second-class matter, July 29, 1932, at the Post Office at Chicago, Illinois under the act of March 3, 1879.

AMERICAN ARTISAN

With which is merged

FURNACES
AND
SHEET METALS

AND

Warm-Air
Heating

Vol. 102, No. 10

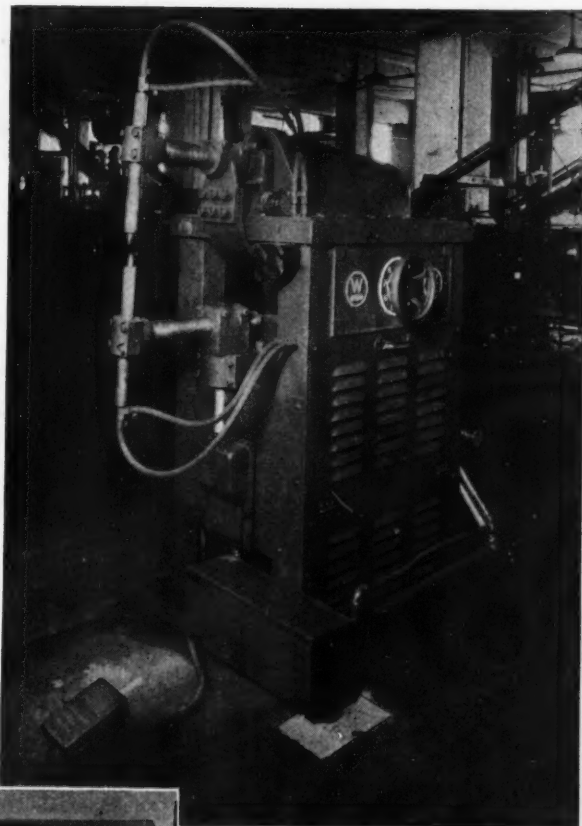
October, 1933

Founded 1880

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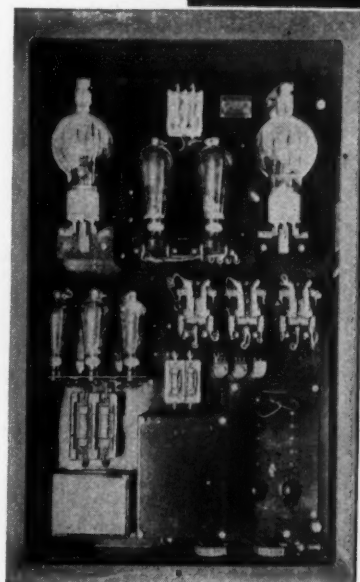
More than 7,000 copies of this issue are being distributed.



The new Westinghouse Spot Welder. To adjust the welding heat merely turn the dial to any desired value of current.

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The new Westinghouse Ignitron Controller for Spot Welding. Its compactness permits installation in an out-of-the-way place.

WESTINGHOUSE has removed the human element from spot-welding, extending the application of this rapid, low-cost fabricating process to every sheet metal shop. Now you can weld metals and alloys such as aluminum and stainless steels . . . of all gauges . . . with absolute precision and uniformity . . . because this new machine is *automatic*.

Through the use of a new electronic tube control, called the "Ignitron Timer," this machine assures *exactly* the same heat for each weld . . . absolute uniformity. The control has no moving parts to wear or

require attention. Adjustments for welding different kinds and thicknesses of material are simple to make.

Automatic Operation—Motor-operated arms bring the electrode tips together under uniformly high pressure. A simple dial adjustment provides easy current control. Electrode tips are water-cooled.

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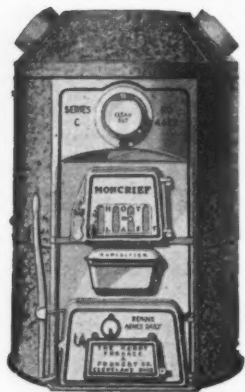
Good News

For
Furnace
Installers

"a perfect fit
... very
pleasing"

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this
letter

It Came to Us
UNSOLICITED



Series "C"
Cast Furnace

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Moncrief Furnaces go up in a hurry, go up right. Contact edges of all sections are ground and fitted to go together smoke and gas tight, then are assembled and shipped as a unit. No time lost in fitting on the job.

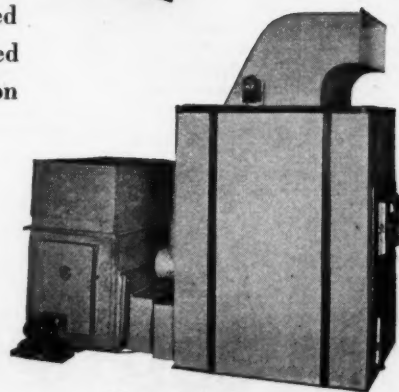
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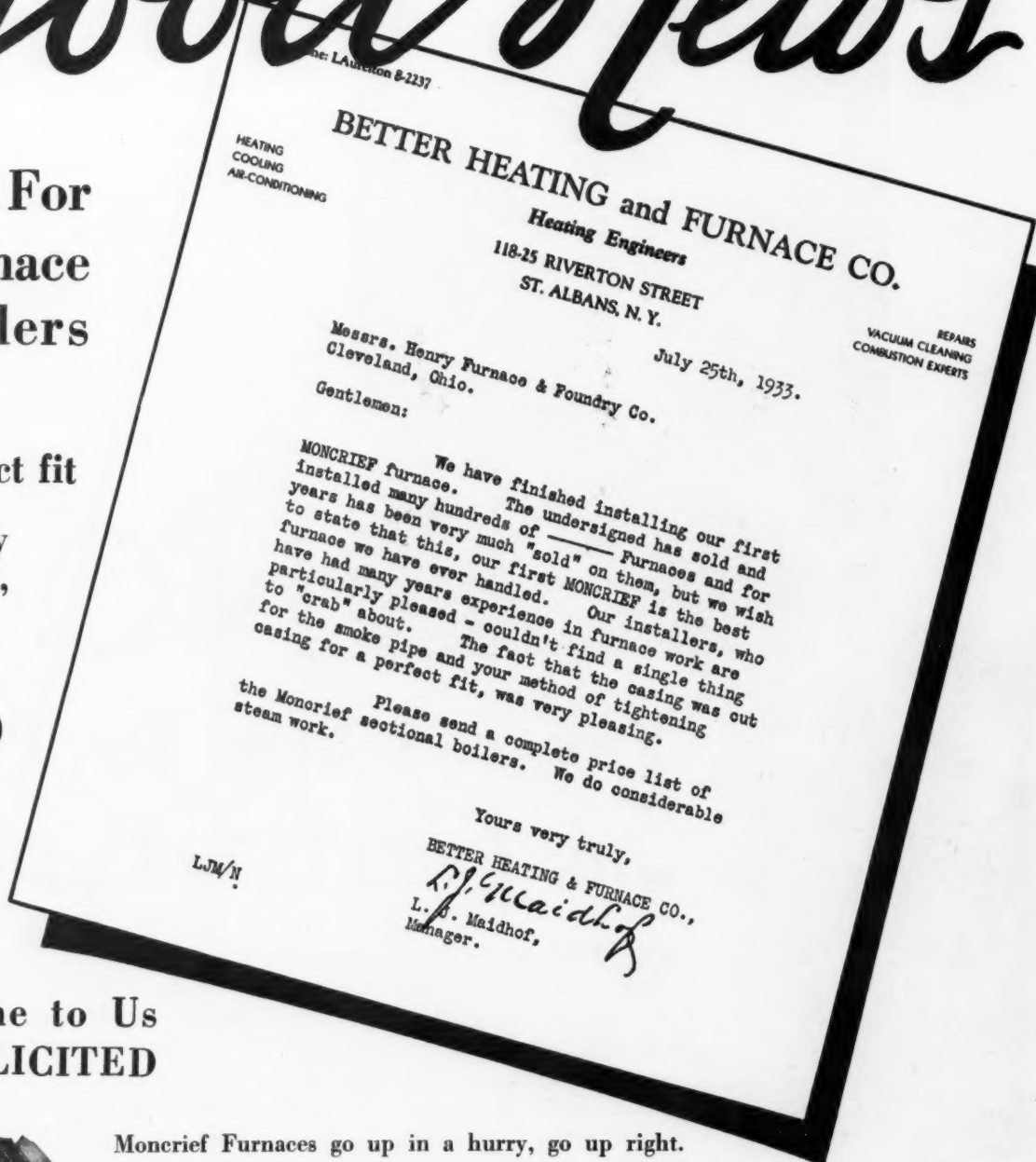
Cast and Steel Furnaces

Air Conditioning Systems For
Gas, Coal or Oil

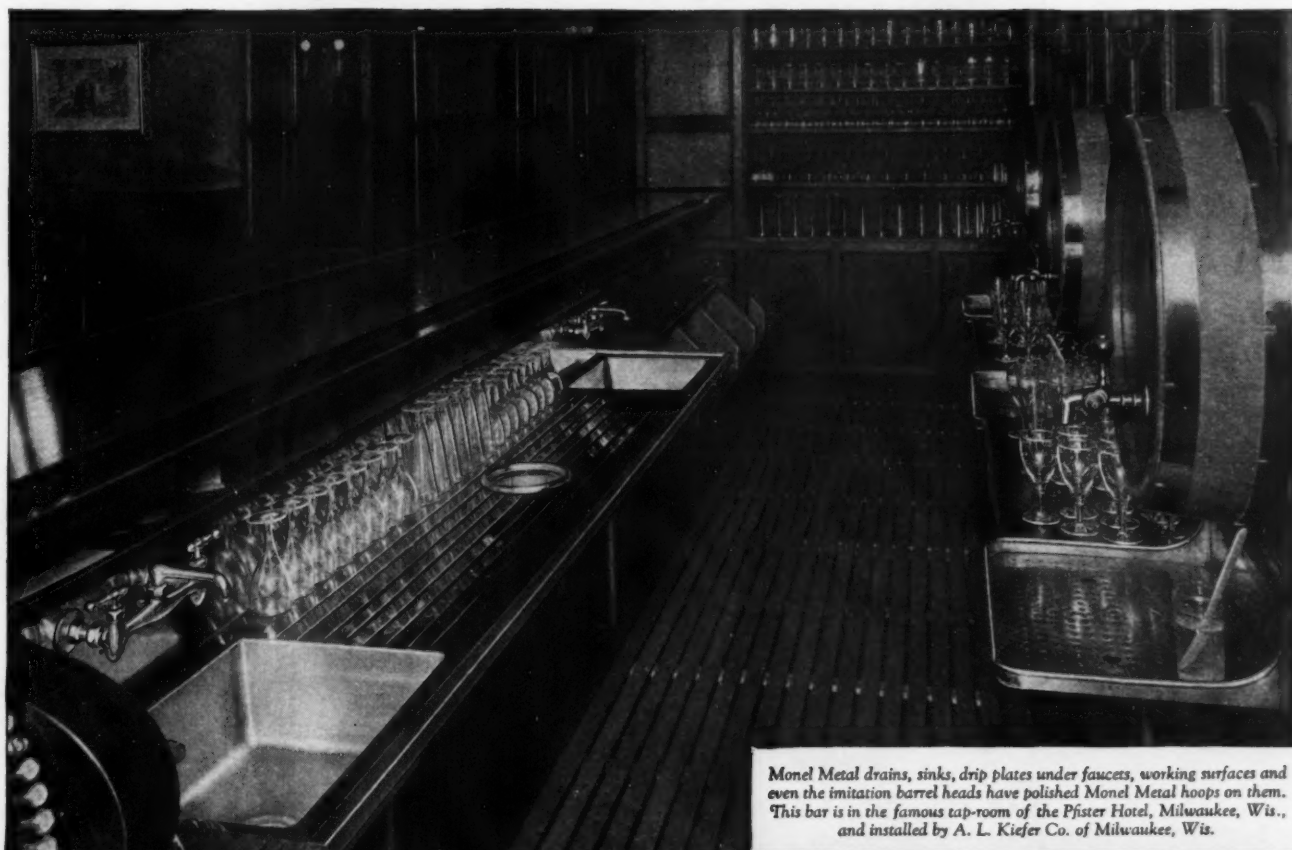


Moncrief Air
Conditioner

PIPE and FITTINGS



Bars Like This Make Good Profits for Sheet Metal Shops Fabricating **MONEL METAL**



Monel Metal drains, sinks, drip plates under faucets, working surfaces and even the imitation barrel heads have polished Monel Metal hoops on them. This bar is in the famous tap-room of the Pfister Hotel, Milwaukee, Wis., and installed by A. L. Kiefer Co. of Milwaukee, Wis.

"Happy Days" ushered back with this sparkling bar equipment built by Kiefer...

● Famous for its beer in the city of famous brews is Milwaukee's Hotel Pfister. When the A. L. Kiefer Co. made an all Monel Metal job of the hotel's renowned tap-room, it opened up a rich new market that is waiting for all sheet metal shops.

Bars, tap-rooms and beer-gardens will be in the market for new equipment for many months to come. Every one of them is an opportunity for the sheet metal shop to

sell a nice contract! And Monel Metal helps you do the job of selling. It's an easy matter to convince the prospect that it is good business to put in Monel Metal.

A Monel Metal bar is the very last word in modern bar-room equipment. For one thing, nothing could reflect appropriate cheer more than Monel Metal's silvery satin lustre. And nothing could encourage patrons' confidence in cleanli-

ness more than the spotless appearance of Monel Metal equipment.

Monel Metal is absolutely rust-proof. It is solid metal right through...no coating to chip, crack or wear off.

Let us tell you about some more of the scores of Monel Metal bars that have just been installed by sheet metal shops...and about the excellent fabricating qualities of Monel Metal. Just drop us a card.



Monel Metal is a registered trade-mark applied to an alloy containing approximately two-thirds Nickel and one-third copper. Monel Metal is mined, smelted, refined, rolled and marketed solely by International Nickel.



THE INTERNATIONAL NICKEL COMPANY, INC.

67 WALL STREET

NEW YORK, N. Y.



Sure
you can sell a substitute, but why
not sell *the accepted standard?*

THE value of a well-known name cannot be overemphasized. Ask the automobile makers, the shoe manufacturers and countless other companies whose products go to the American public. They all know that, other things being equal, the best-known brand will sell easiest and fastest.



So why not sell *Anaconda* Copper? It is backed by the industry's most widely known name. It is accepted by the public generally as the standard of sheet metal quality. *Your* selling job is easier if you push trade-marked

Anaconda Copper. And by so doing you provide your shop with metal that is uniformly workable . . . because it is of even purity, gauge and temper throughout each sheet or strip.

There is no substitute for quality, and none for experience—two reasons why so many progressive sheet metal contractors insist on *Anaconda*. Leading sheet metal supply houses everywhere carry *Anaconda* Copper in sheets, rolls and economy strips, and copper gutters, leaders, elbows and shoes trade-marked ANACONDA.

THE AMERICAN BRASS COMPANY
General Offices: Waterbury, Connecticut
Offices and Agencies in Principal Cities

ANACONDA COPPER

The Code—Remodeling—Our Buying Dollar

The Code

In publishing the tentative code for the sheet metal contracting industry in our September issue, we stated that changes would probably be made. That code, as presented to Wash-

ington, did not meet with approval, because it set itself up as an independent code for one small industry.

As we said in our August issue, the aim of the government is to group codes into general industries in order to simplify work. For our trades this grouping means that the furnace, sheet metal and roofing contractor will be considered as one group within the Construction League of the U. S.

Exactly this situation has arisen. The tentative code has, therefore, been re-written to conform with the specifications of the general code.

We publish in this issue the code as revised and submitted to Washington on Sept. 13 and revised Sept. 27.

This code has not been approved, bear in mind, and may also be revised.

Replace, Remodel

It would be difficult to persuade any warm air heating contractor that heating plants in general are in good condition for the coming heating season. As a matter of fact, most con-

tractors are probably well fortified with statistics to show that never in the last 30 years have heating plants been in worse condition.

These contractors are probably right. We hear reports from big cities, small towns and rural areas that more furnaces than can be counted are being held together with band iron, cement and hope.

In many cases such extreme hesitancy against spending money is not necessary—for many of the owners of these plants have cash or can make payments on an adequate and safe heating plant. But caution has been a byword for so long a time that these owners are firmly entrenched mentally and sales are difficult.

Regardless of this fact this is the only big market from which we can draw prospects for winter work. There has been and will not be any appreciable new domestic construction. There is left, then, those home owners who will have to have a new furnace and those others who can afford remodeling if we can present strong enough arguments.

The technique should be the same in both cases. The owner needs or will consider a new heating plant. Probably the plant he has is several years old and possesses none of the present day betterments. Starting with the existing system, the aggressive contractor will make the special problems and troubles of the old sys-

tem the basis for his arguments for a more modern plant.

So your master bed room is hard to heat? Certainly we can remedy that. And your wife complains of the dust and dirt of the heating plant? The chances are it isn't the furnace, but, anyway, we can clean all the dirt from your whole house regardless of where it comes from. And you hate to get up in a cold house to open the furnace? The solution to that is easy. And your wife is getting tired of shoveling coal when you are away? Simplest thing in the world to give you any one of three forms of automatic heat.

The list might be extended indefinitely.

The point is—we can answer any complaint with specific suggestions for a remedy, we can sell the necessary equipment, we know the problems and their solutions, for we are heating experts.

These are the prospects and these are the tactics of the program and drive for work this coming winter. Repair? Yes, when necessary. But replace and remodel will be the things we will talk about.

Consumer's Dollars

As the tremendous drive for nationwide renewal of business gets into full swing it becomes evident that the drive for the consumer's dollar will likely take place ahead of any increase in

quantity of that same consumer's dollars. This situation is to be expected.

Such a situation places a very definite problem before our industry. That is the problem of who shall get that limited number of dollars?

The most casual reading of any newspaper will show that every industry and retail sales organization is driving for a share of the citizen's buying dollar with low prices and other appeals. Every citizen will be asked to buy as many of the thousands of items on the market as he can afford. And the citizen must decide which of these items he wants most.

For the heating contractor this drive for the consumer's dollar is a serious problem. The things we have to sell do not appeal as readily as clothes, automobiles and entertainment. It requires real salesmanship to sell a furnace when the prospect really prefers a new automobile.

The saving feature of our predicament is air conditioning. We know that in most cases the owner won't pay for air conditioning as we know it, but he will pay for forced air, cleaning, automatic control, automatic heat, humidity if the right story is presented.

In air conditioning we have the lever to sell our services and products in the face of intense competition.



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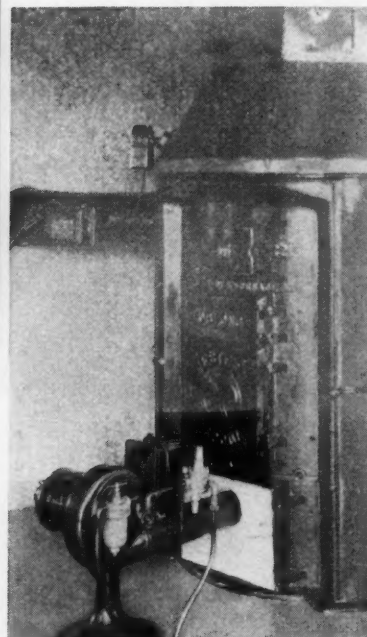
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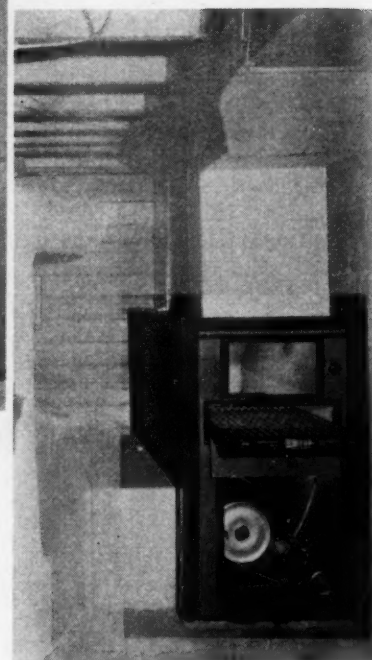


With these accessories and services we can transform the basement shown here—

Sell
Oil Burners !



Sell
Blowers !



Repair, Replace, Remodel! Our Three "R's" To Profit

"WHERE will we look for business this coming winter?"

This is the question uppermost in contractors' minds as the 1933-1934 heating approaches.

We believe that the big volume of work will come from the repair, replacement and remodeling of existing heating systems.

Proof of this statement is indicated by any analysis of our present, past and future sales market. Generally speaking the warm air heating contractor has secured his business from two principal sources—new construction and replacement.

New construction has been absent for several years and there is little to be expected during winter months. But the replacement mar-

ket goes on like taxes and sickness because furnaces do wear out, systems finally reach the place where toleration is no longer possible, and home owners learn that they can buy modern, satisfactory heating in which former troubles are eliminated.

This replacement and remodeling market is composed of two types of prospects. First are those home owners who have furnaces. These may be worn out, unsatisfactory, or the owner may want a better plant. The second field consists of owners of hot water, steam or vapor heating who want air conditioning and understand or can be told that conditioning is difficult to get with their form of heat.

The furnace field in itself offers today more prospects than our in-

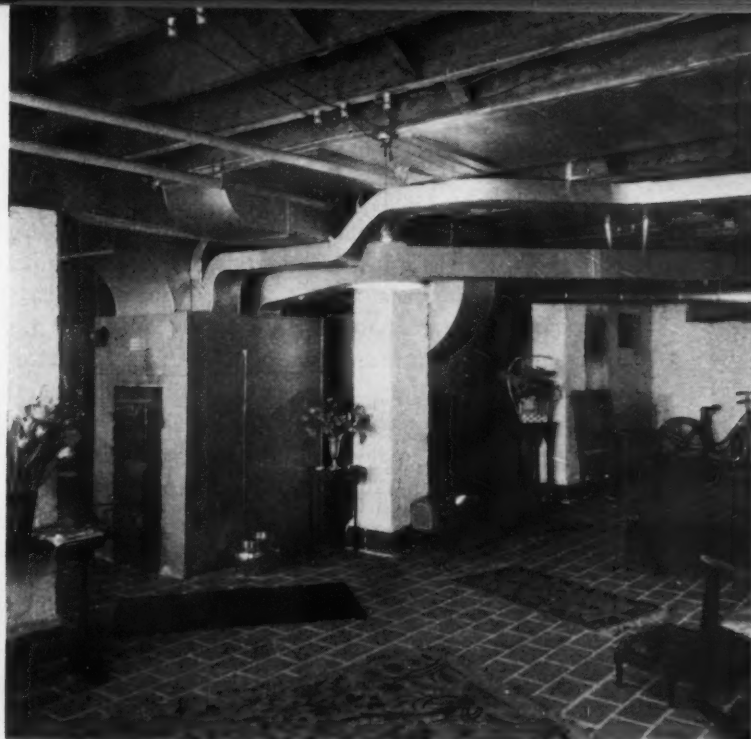
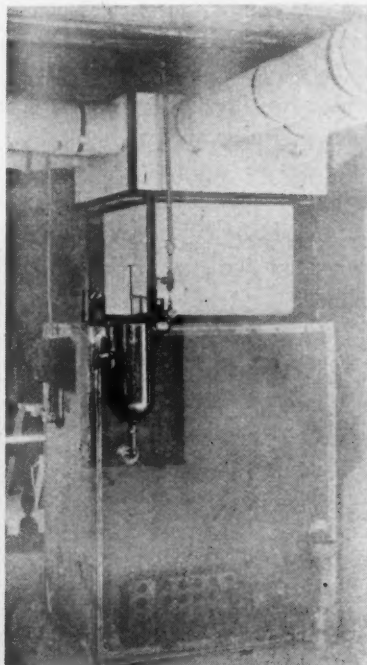
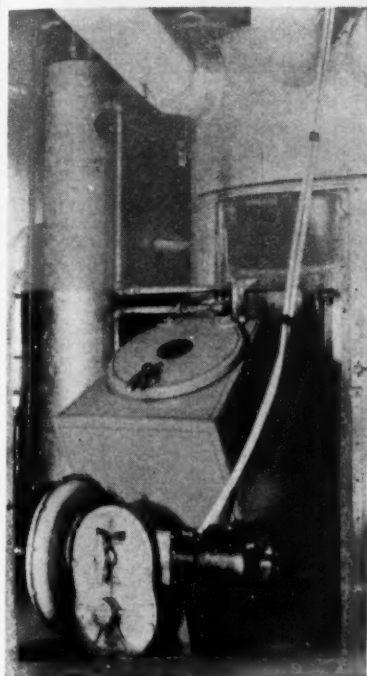
dustry can call upon. It is probable that heating systems generally are entering the coming heating season in worse shape than in any past year. People have foregone cleaning, repairing, replacement year after year. Thousands of furnaces are held together with band iron, cement, bolts or prayer. Some of these plants will have to go through another season if it is physically possible. Other owners will resort to lesser types of heating plant because they cannot afford a new or repaired central plant.

And yet in spite of all this there are dozens or hundreds of furnaces in every city which should be repaired, replaced or remodeled, in houses where the owner has the money or can pay on time, if only

To the clean, beautiful and livable basement shown here—a typical remodeling job.

Sell
Humidifiers !

Sell
Stokers !



these owners are brought out into the open and talked to.

We should add to this large market the owners of hot water, steam or vapor heating who have learned that their systems offer only one thing—heat. To bring into their homes those other health requisites—cleaning, circulation, humidity—they must call upon the warm air heating contractor to revamp their present plant.

This market is enormous. In it will be found those owners who bought steam, hot water and vapor because they wanted the best. They have found out that their plants are not healthful in the present meaning of the word. They can be shown that circulated warm air from a plant correctly designed and engineered using some of the old

equipment or entirely new apparatus will insure healthful heat.

Warm air heating contractors should bear in mind that regardless of the type of heating plant in use, regardless of its present condition, regardless of its present drawbacks or faults, regardless of what the owner wants—we have the equipment, the experience, the ability to remedy and provide.

In our hands during these last three years has been placed more experience, more information, more equipment than has been given any other industry in the last hundred years. If we have been willing to listen, to learn, to try we should be able to recommend and install as satisfactory a heating plant as any owner can demand.

Our Service

We should be able to satisfy any specific or any complete requirement from the owner. If the owner wants cleanliness we can filter. If he wants humidity we can humidify. If he demands circulation, uniform

temperature throughout the house, we can provide these. If the owner demands a system which he never has to touch, which operates like his electric supply, we can give exactly this type of automatic heat.

We are able to give such service because during the last three years we have passed through the kindergarten, grade school and college of modern heating and are now the graduated technicians. Other heating industries are still in their kindergarten work.

We should realize that our industry has been extremely fortunate in the schooling we have been through. We began three years ago to install fans and blowers in order to give controlled air circulation, uniformity of room temperatures, more responsive heating. Most of us learned the why's and wherefore's of forced air long ago.

We learned to clean the air with filters and washers while other types of heat were still talking about heat alone.

Doctors first told us about the advantages of adequate humidity. We knew and learned how our warm air systems could give adequate humidity if only we applied the things we learned or the equipment available.

Automatic, controlled heat is an old subject with us. Gas, oil, stoker heating has been second nature to most of us for three years.

As a result of all this schooling we are able to analyze and solve any problem and recommend just the type of system and necessary apparatus for the installation.

Competitors have not had our experience with forced air, their knowledge of cleaning is confined mostly to sales conversation, humidity is something they have had to talk about against their wishes, and automatic heat and air conditioning to them means entirely new systems.

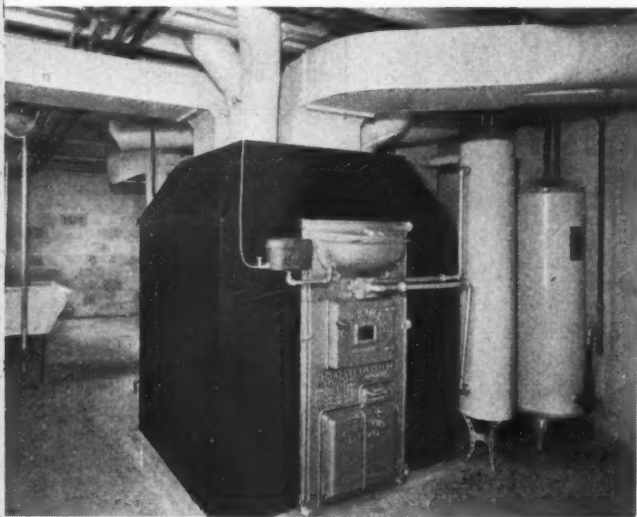
With us, air conditioning or a modernized heating plant, is clearly pictured as a grouping of appara-

let us picture an average house and its furnace heating system. This house is heated by a gravity plant. In principle there is nothing wrong with a gravity plant for rightly installed and designed according to Code the gravity plant will return satisfaction under most conditions.

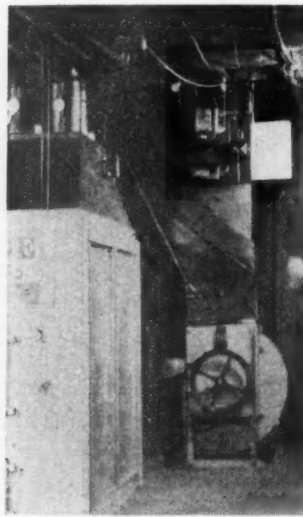
But there are limitations to many gravity systems. There may be one or more rooms which are hard to heat. Temperature distribution may vary from room to room or within one large room. On windy days one side of the house may be cold. Rooms may be so located that it is practically impossible to heat those

chilled bath rooms, are for us merely problems of correct design and balance plus improved apparatus rightly synchronized and controlled.

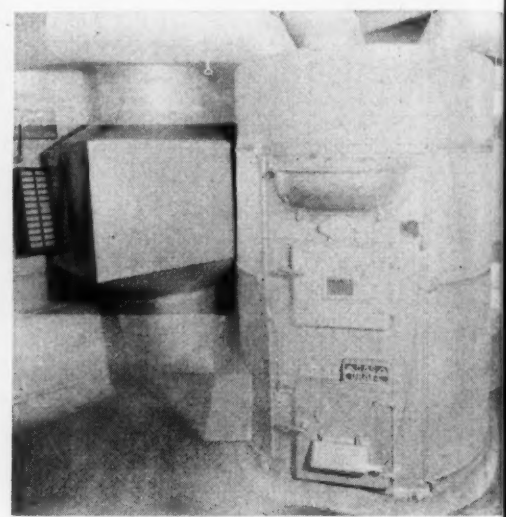
If the housewife complains of dust and dirt (and this may be dust and dirt from outdoors, from rugs, from traffic) we can install apparatus which will remove all this dirt and dust continuously day and night by the addition of filters or washers. If the owner wishes we can service this equipment so that cleaning will be as effortless as breathing. The reduced housework brought about by cleaning is a story



Sell Painting !



Sell Controls !



Sell Fillers !

tus, each part of which performs one function which we understand. Furthermore we can recommend and install any one or all of these parts as the owner wishes or can pay for and know exactly how the addition will better his present equipment.

This knowledge which we have gained in the hard school of experience is the principal reason why we stand so well prepared for the buying developments of the coming months.

This experience has been further fortified by the apparatus which has been developed for us during the last three years. We can truthfully say that every phase of modernization has been fully met by the equipment given us.

To fully appreciate our position

rooms under gravity air flow.

Perhaps the owner of our house has reconciled himself to these conditions and has come to expect these limitations as part of the disadvantages of every winter season.

But we as heating experts have another story to tell.

It is a story of improved technique and equipment.

We can approach this owner with every confidence that we can give him a system which will be satisfactory under every condition. His hard to heat room can be brought up to comfortable temperatures regardless of wind or weather or location by the addition of supply, returns and the changing of gravity to forced fan circulation.

Too hot downstairs, too cold upstairs, cold areas in the living room,

no other industry can match.

Our home owner has doubtless read and heard much of the destructive and dangerous conditions brought about by too little moisture in the air. Countless volumes have been written about the effects of dry air on the human body or on furniture. Other volumes have been written on the benefits in health and comfort obtained by breathing air containing plenty of moisture.

If our home owner is at all average he will want adequate humidity for himself and his family. Such humidity we can give in almost any degree from a wide chain of apparatus ranging from simple evaporating water surfaces to elaborate and minutely controlled humidifiers.

Appearance is an important feature of most transactions today. People buy clothes, furnishings, automobiles, for appearance. They buy heating systems for this same appearance.

If the old heating system has been in ten, fifteen or more years there are probably many unsightly registers and returns scattered around the house. These can be beautified with the dozens of modern registers and grilles now on the market without changing anything but the face. Still further improvement can be obtained by changing floor to baseboard or side wall locations, by

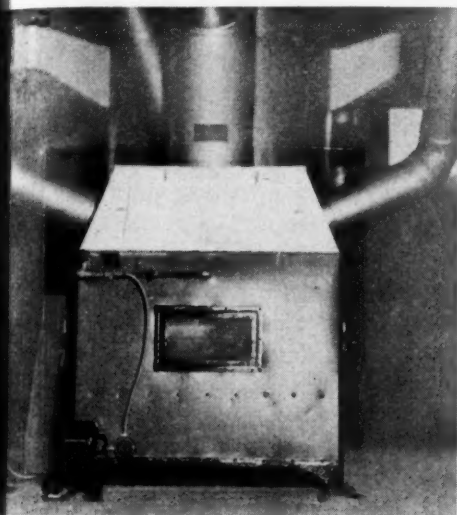
equipment, in most cases we have the experience to install and regulate, but above all we know heating. It is this knowledge of heating that has and will keep the warm air heating contractor from falling into the pitfalls which ruined so many automatic heating device specialists.

If our prospect has a steam, vapor or hot water system we ought to be able to show how circulation, humidity, cleaning can be added using his boiler as a source of heat supply and revamping the supply to forced warm air from the boiler on. Such systems have been installed in practically every community. They

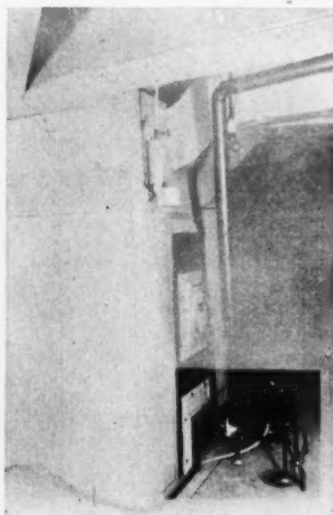
This experience which we possess and which no other branch of the heating industry possesses is our card of admittance to the field of remodeling. This experience arms us with the information required to analyze problems, recommend betterments and insure satisfaction.

There remains the question—"What will we do with this experience?"

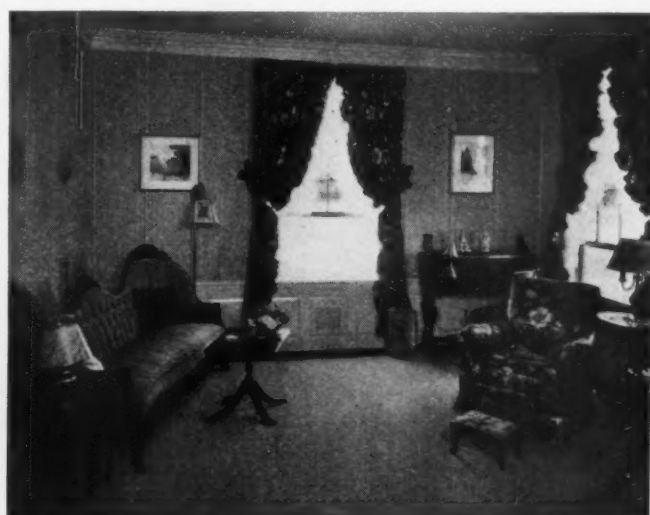
If we grant that repair, replacement and remodeling will be the field from which will come most of our next winter's heating work, then it seems untenable that we



Sell Conditioners !



Sell Gas Burners !



Sell 1933 Model Registers !

substituting present day grilles for broken wood or old style heavy metal grilles.

And this beautification can be carried into the basement where because of moving the furnace into one corner and the application of automatic heat practically the entire basement can be made over into comfortable, attractive living quarters. And the furnace itself can be specially cased, painted, trimmed; the ducts can be concealed or placed flat against the joists, unsightly and cumbersome pipes can be eliminated. The result is a basement as different from the old one as a 1933 car is from a 1914 model.

And lastly there is automatic heat. What does the owner prefer—gas, oil, stoker fed coal? No matter which one we have the

require the addition of a heat transfer section, fan, filters, controls, ducts, registers and returns.

If the boiler is left in place the remainder of the revised system is strictly a warm air heating contractor's job. Remodeling such systems is a problem of handling air and that is our specialty.


All of these problems connected with the remodeling of gravity warm air, steam, vapor and hot water systems into modern air conditioning systems have come within the scope of our experience and schooling in the last three years. We have learned what specific pieces of apparatus are required for each specific function and we have learned how to select, apply and control individual and group apparatus.

should sit idly by and let this experience go to waste.

Some one will get work from owners whose furnaces or boilers are worn out or unsatisfactory. In many cases such work will be done by contractors who will be content to merely replace duplicate equipment. Such sales methods are the quick and easy path, but are not in keeping with the trend of the times.

We should apply our experience and try to make every installation better than the plant we replace. Remodel means the sale of fans, humidifiers, filters, controls, new registers and grilles, revamped return systems, beautification of plant and basement.

It is up to every contractor to see how much and not how little he can sell.



J. Steinberg & Sons
Beer Coolers & Supplies
WHOLESALE ONLY
740 Frelinghuysen Ave. Newark, N. J.
PHONE BIGELOW 3-1864
Newark, N. J.

SPECIFICATIONS
DUPLEX BEER COOLER

This cooler is built to meet the popular and immediate demand for a substantial yet inexpensive beer cooler, designed by men who have had experience in metal construction and beer equipment. It exactly fits these requirements.

Quality has been combined with quantity production, permitting a price which cannot be otherwise approached.

	24"	30"	36"
TANKS	Upper: 21"x10" x13" Lower: 21"x19 1/4"x13"	27"x10" x13" 27"x19 1/4"x13"	33"x10" x13" 33"x19 1/4"x13"
INSULATION	One-half inch insulating board, plus one inch fir on five sides.		
METAL COVERING	Fronts either white enamel or polished brass, optional without extra charge. Chrome, Monel or stainless steel at slight additional cost. The back and sides are galvanized iron painted green.		
TRIM	24 gauge polished brass, both upper and lower trays. Lower tray has handle and is movable, permitting access to lower tank used for bottle beer storage. Tray plates 16 gauge perforated polished brass.		
LEGS	Ten inch wood legs which may be sawed off to give proper length to suit individual requirements.		
EQUIPMENT	The equipment is not furnished with the coolers. The design is such that either ice or mechanical refrigeration may be readily applied. When ice is used, the beer coils are usually sixty feet long with a thirty foot water coil. The 24" cooler is drilled for three faucets, the 30" cooler for three or four faucets and the 36" cooler for four or five, as specified.		
SIZE	24"	30"	36"
Base	24"x23"	30"x23"	36"x23"
Back	24"x13"	30"x13"	36"x13"
Upper Portion	21"x10"	27"x10"	33"x10"
Top opening clear	24"x23"	30"x23"	36"x23"
Lower Portion	21"x19 1/4"	27"x19 1/4"	33"x19 1/4"
Base to top of Lower Tray	15"	15"	15"
Lower Tray to Top	17"	17"	17"
Base to top	32"	32"	32"
Overall Height	42"	42"	42"
Including Legs	48"	48"	48"
Legs	10"	10"	10"

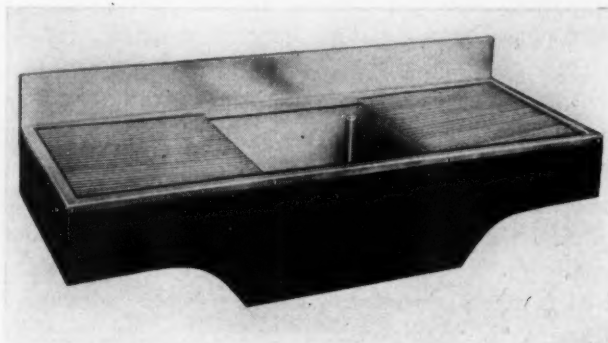
FORTY years ago Jacob Steinberg established a business in Newark, New Jersey, for the purpose of manufacturing various sheet metal products, particularly the sheet metal work connected with building construction. Some fifteen years later fire doors, kalamein work and all kinds of roofing were added to the firm's activities. The firm's principal products for many years have been skylights, marquee, fire doors, kalamein doors in bronze, copper, steel and aluminum, roofing and general architectural sheet metal work.

Jacob Steinberg, founder of the firm, is still active head of the business and has taken in his sons to form today's firm of J. Steinberg and Sons. This firm and its operations have been and are typical of the activities pursued by sheet metal shops of the larger type, shops equipped to handle all types of wood working,

machine shop and sheet metal fabrication.

Like many other large shops, with heavy investments in equipment, the decrease in general building brought about slack operations in the firm's standard lines. Other products which could be manufactured with the

The Steinberg workboard is metal faced on a solid wood frame with wood underneath the working surface. A variety of metals are used and several types and sizes are standard.



facilities and equipment were investigated and in some cases tentatively scheduled.

But when beer was legalized last spring the firm looked over the possible equipment which beer manufacturing and dispens-

3,000 Coolers Have Been Fabricated and Sold By Steinberg of Newark

ing would require and determined that beer coolers and work tables of several types would be in great demand and, further, that any firm which laid plans to manufacture such equipment would be in a good position to reap profits from beer sales.

Considerable time and thought was given to experimentation with different designs and types of coolers bearing in mind all the while the faults dispensers found in the equipment in use in the pre-prohibition era. Chief among these troubles, of course, was the amount of time, labor and money required to keep dispensing equipment in working order and in good appearance.

With these specifications in mind, a line of coolers was de-

signed with porcelain fronts and in various metal finishes, so designed and fabricated that between the metals and the design, cleanliness would be assured at all times and at a minimum cost.

Two general types of coolers

are being manufactured—an all metal line for electrical refrigeration and a lower priced wood frame line which can be adapted to either ice or refrigeration. In both classes cooling coils of different length are used when decision is made for one or the other form of cooling.

Construction

Both lines are made in three standard sizes—24-inch, 30-inch, and 36-inch. The all metal line has a deep coil box with a sweet water bath permitting a small temperature differential between the refrigerant and the beer. A compartment is also provided for ice cooling of bottled goods. In the all metal line fronts of either white enamel or polished brass are standard, but Monel, chrome, stainless steel are also made for a small additional cost. Backs and sides are galvanized iron, painted green. All tanks are made of tinned copper, 16 ounce, lock seamed and soldered. Two inches of cork are used on five sides for insulation.

The frame of all the all metal line is angle iron with steel tube legs which are adjustable. Fau-

cets and coils are furnished with the cooler only when ordered.

The lower priced line is built up on a one-inch fir cabinet and has wooden legs which are cut off for height adjustment. One-half inch of insulating board is used on five sides. The cooling chamber is tinned copper, locked and soldered while fronts are furnished in white enamel or polished brass at standard prices or in Chrome, Monel, stainless steel at a small additional cost. The backs and sides are galvanized iron, painted green.

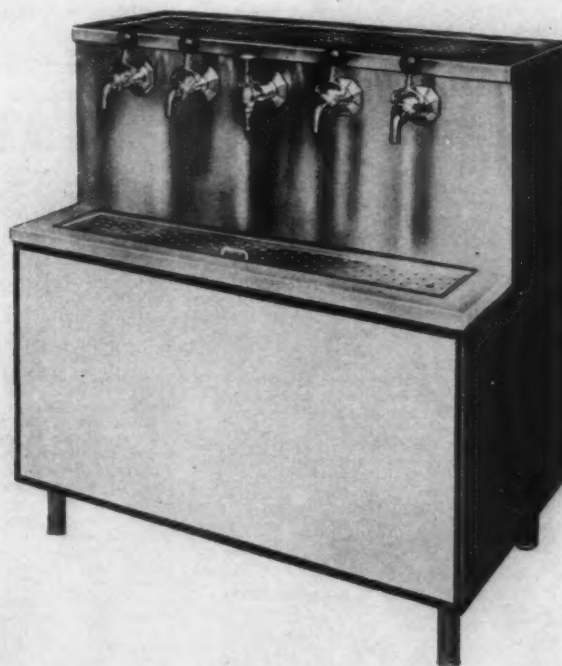
The porcelain fronts used are fabricated in the Steinberg plant and sent to outside companies for enameling.

The work tables are fabricated in metals to match the cooler and

are mostly of the two-drain board type with corrugated working surfaces and a center sink either single or double compartment with "high water" drain. A back board is standard. The metal is fabricated to and placed upon a full wood frame which has solid wood surfaces under all working areas.

Since the company began manufacture of this line of beer equipment more than 3,000 coolers and 500 workboards have been sold. As a general rule the company has sold directly to stores or dealers for resale and has sold to dealers from Maine to Florida and from the Atlantic to the Mississippi. A sales crew has been put out, spotted around the country, with headquarters in various states.

The all-metal cooler at the right has a metal frame, enameled metal front, painted galvanized iron sides and back, adjustable metal legs and is furnished in a number of metal tops and drains.



The wood frame model to the left has a wood frame and legs, enameled front, galvanized iron sides and back. Monel, stainless steel, copper, chrome are used for tops and drain pans. Faucets are bought extra in both models.

How well the company's members analyzed the market is indicated by the large sale and by the fact that the line has met with remarkable acceptance everywhere. It is interesting to note that about 30 percent of the units are sold without fixtures in order that the user can match existing equipment. The other 70 percent are sold fully equipped with faucets and coils as desired.

(Continued on page 18)

A Code of Fair Competition

for the

Roofing and Sheet Metal Contracting Division of the Construction Industry

To effectuate the policies set forth in Title I of the National Industrial Recovery Act, the following provisions are established as a Code of Fair Competition for the Roofing and Sheet Metal Contracting Division of the Construction Industry:

ARTICLE I.

This Code for the Roofing and Sheet Metal Contracting Industry, being a Supplemental code of the general or basic Code for the Construction Industry, is subject to the provisions of the "Code of Fair Competition for the Construction Industry," which is hereby adopted and made a part hereof and shall be attached hereto, and any provisions of this Code of Fair Competition which may be inconsistent therewith shall yield thereto.

ARTICLE II.

Definitions

The term "roofing and sheet metal contracting industry" as used herein is defined to mean the business of furnishing, installing, applying, repairing, and servicing or maintaining roofs on which sheet metal, slate, tile, asbestos and asphalt shingles, composition or membrane roofing, asbestos or other roll roofing, insulation and other special treatment of roof surfaces is required; the furnishing, erecting and applying of sheet metal, slate, tile, asbestos or asphaltic materials used for siding on any building or structure; waterproofing and dampproofing as required on floors, walls and foundations of buildings and non-habitable structures, except cement waterproofing done by the integral method; the fabricating, furnishing, erecting, installing, applying, repairing, servicing or maintaining of all sheet metal work of No. 10 U. S. gauge and lighter as required on or in buildings and structures, including among others, metal ceilings, warm air furnace heating systems and air conditioning and cooling systems used in connection therewith, sheet metal work in connection with heating, ventilating and air conditioning systems, blow pipe and exhaust systems, and sheet metal products and equipment required in industrial plants, and for agricultural and domestic use.

The term "person" as used herein shall include any natural person, partnership, association, corporation, trust, trustee, trustee in bankruptcy, receiver or agency.

The term "contractor" as used herein shall include every person engaged in any one or more branches of the business as outlined in the first paragraph of Article II, or who offers his services as such.

The term "employer" as used herein shall include every person who employs roofers and/or sheet metal workers for the purpose of fabricating, erecting, installing, applying, repairing, and servicing or maintaining of roofing, waterproofing and all sheet metal work of No. 10 U. S. gauge and lighter, as above described, in whole or in part with his own organization, either under contract for other persons or within his own premises.

The term "roofer" and/or "sheet metal worker" as used herein shall include every person employed by an employer for the purpose of fabricating, erecting, installing, applying, repairing, and servicing or maintaining roof surfaces, waterproofing and all sheet metal work of No. 10 U. S. gauge and lighter.

The term "employee" as used herein, where including others than roofers or sheet metal workers, shall mean all

This Code of Fair Competition is a revised draft of previous codes. In it are included revisions made by the Code Committee at a meeting held in Washington on September 26th, and further revisions suggested at the preliminary conference held September 27th.

This supersedes any copies of previous drafts of our code you may have received.

The Code for the Roofing and Sheet Metal Contracting Division of the Construction Industry in its present form merely reflects the proposal of the above-mentioned industry, and none of the provisions contained therein are to be regarded as having received the approval of the National Recovery Administration as applying to this industry.

persons employed by roofing and/or sheet metal contractors.

The term "member of the Code" includes any member of the industry who shall expressly signify assent to this Code.

Population for the purposes of this Code shall be determined by reference to the 1930 Federal Census.

ARTICLE III.

Employment Provisions

Section 1. As required by Section 7 (a) of Title I of the National Industrial Recovery Act, the following provisions are conditions of this Code:

(a) Employees in the roofing and sheet metal contracting industry shall have the right to organize and bargain collectively through representatives of their own choosing, and shall be free from the interference, restraint or coercion of employers of labor, or their agents, in the designation of such representatives, or in self-organization, or in other concerted activities for the purpose of collective bargaining or other mutual aid or protection.

(b) No employee in the roofing and sheet metal contracting industry, and no one seeking employment therein, shall be required as a condition of employment to join any company union, or to refrain from joining, organizing or assisting a labor organization of his own choosing.

(c) Employers shall comply with the maximum hours of labor, minimum rates of pay, and other conditions of employment, approved or prescribed by the President.

Section 2. Minimum Wages—Employers in the roofing and sheet metal contracting industry shall pay wages:

(a) Not less than the minimum rate of wages for unskilled labor hereby established, which shall be not less than forty cents (40c) per hour unless the hourly rate for the same class of work on July 15, 1929, was less than forty cents (40c) per hour, in which case the hourly rate shall be not less than that of July 15, 1929, and in no event less than thirty cents (30c) per hour.

(b) Not less than the minimum rate of wages for accounting, clerical or

office employees as follows: \$15 per week in any city of over 500,000 population, or in the immediate trade area of such city; \$14.50 per week in any city of between 250,000 and 500,000 population, or in the immediate trade area of such city; \$14 per week in any city of between 2,500 and 250,000 population, or in the immediate trade area of such city; and \$12 per week in towns of less than 2,500 population.

(c) To an apprentice with over one year's service, not less than forty percent (40%) of the minimum wage established for the class of worker he is engaged to assist.

(d) To a beginner in his first year's service, not less than seventy-five percent (75%) of the minimum wage established for an apprentice.

(e) Nothing herein contained shall be construed to apply to employees whose rates of wages are established for specific projects by competent government authority (Federal, State or political subdivisions thereof) acting in accordance with law or to employees whose hours of work are established by wage agreements and/or mutual understandings now in force where such minimum rates are higher than those set forth herein.

(f) For workers employed on a piece-work or contract basis, not less than the minimum hourly wage rate established for the same class of work.

(g) There shall be no evasion of this Code by reclassification of the functions of workers. A worker shall not be included in one of the above exceptions unless the identical functions were identically classified on June 16, 1933.

(h) The minimum rates of wages shall apply with equal force to any contractor who works with tools, and he shall charge his time so occupied at said rate to each job, as though he were an employee.

Section 3. Maximum Hours—(a) On and after the effective date, employers shall not employ anyone more than an average of forty (40) hours a week during a six months' calendar period, or forty-eight (48) hours in any week in such period, or eight (8) hours in any one day, except kettle men, outside salesmen and employees engaged in professional, executive, administrative and supervisory positions, and except in case of emergency work required to protect life or property, and excluding establishments employing not more than two persons in towns of less than 2,500 population, which towns are not part of a larger trade area.

(b) A supervisory position is defined as one in which the person occupying it does not work with tools.

(c) No employee shall work or be permitted to work for a total number of hours in excess of the maximum number of hours prescribed for each week and day, whether employed by one or more employers.

(d) Nothing herein contained shall be construed to apply to employees whose hours of labor are established for specific projects by competent government authority (Federal, State or political subdivisions thereof) acting in accordance with law or to employees whose hours of work are established by agreements now in force.

(e) Maximum hours shall apply to any contractor who works with tools as though he were an employee.

(f) Area Agreement for Hours and Wages—Minimum hourly rates of wages and maximum hours of labor may be established for a region or locality by mutual agreements arrived at through bona fide collective bar-

gaining between truly representative regional or local groups of employers and employees. In no event shall such minimum hourly rates of wages be less, nor in any event shall such maximum hours of labor be more than those established herein.

Section 4. Minimum Age—No employer in this industry shall employ any minor under the age of sixteen (16) years, provided that if a State law specifies a greater minimum age no employee under the greater minimum age so specified shall be employed in that State.

Section 5. Safety Provisions—The employer shall provide for the safety of his workmen. He shall protect his employees with compensation insurance and shall comply with all National, State or Local ordinances referring to safety measures insofar as the same may apply to his class of work.

Section 6. Immediately after the approval of this Code the "Employment Provisions" thereof (Article III, Section 1 to Section 5, inclusive), shall be posted in the shop and office of every employer.

ARTICLE IV.

Administration

Section 1. Amendments—(a) It is recognized, in accordance with Section 10 (b) of Title I of the National Industrial Recovery Act, that the President may from time to time cancel or modify any order, approval, license, rule or regulation issued under this title.

(b) This Code may, from time to time, be amended, revised, or supplemented in such manner as may be indicated by the needs of the public, by changes in circumstances or by experience.

Section 2. Administrative Agency—(a) To effectuate the purposes of this Code and provide for its administration within the roofing and sheet metal contracting industry, there is established a "Code Authority Committee for the Roofing and Sheet Metal Contracting Industry," nine members of which shall be elected by the Roofing and Sheet Metal Industries Conference from the membership of the Code, and not more than three members of which the Administrator may from time to time appoint as members of the industry but not members of the Code.

(b) The Code Authority Committee may, with the approval of the Administrator, adopt such rules, and take such actions, and conduct such investigations as may be necessary to effectuate this Code, and to that end may establish sub-committees and subordinate occupational, regional, state or local administrative committees and prescribe such duties, rules and regulations as are deemed necessary to carry out the purposes of this Code and the National Industrial Recovery Act.

(c) The Code Authority Committee, as approved by the Administrator, shall gather such information and statistics as may be needed to effectuate this Code and shall furnish to the President or his authorized agent such reports and statistics as may be required.

(d) In addition to information required to be submitted to the Code Authority Committee, there shall be furnished to government agencies such statistical information as the Administrator may deem necessary for the purpose recited in Section 3 (a) of the National Industrial Recovery Act.

(e) Local Administrative Committees, as may be appointed, or approved, by the Code Authority Committee, shall be empowered to investigate any violation of this Code and to call upon any contractor within their territory for such data as may be needed to effectuate the provisions of this Code.

Section 3. The Code Authority Committee for the Roofing and Sheet Metal Contracting Industry shall coordinate its acts with the administrative agency established under the Code of Fair Competition for the Construction Industry.

Section 4. When approved by the President this Code, in all of its provisions, revisions or interpretations thereof, shall be binding upon and adhered to by all members of the Code. They shall each bear their proportionate share of the expense incident to initiating, securing the approval of, and administering this Code of Fair Competition, and all expenses incurred by the Code Authority Committee in

the performance of its administrative duties.

ARTICLE V.

Regulation of Fair Competition

Section 1. For the protection of the public, the industry recommends that a roofing and/or sheet metal contractor shall have the following qualifications:

(a) be generally qualified by his technical training, and/or experience in the industry to direct properly the application, installation, erection or repairing of roofing, waterproofing and/or sheet metal work as required in the construction industry;

(b) be an employer of roofers and/or sheet metal workers;

(c) have an established place of business, have the necessary tools and equipment required in the performance in which he specializes, and maintain a set of books and records, as approved by the Code Authority Committee, incident to the conduct of a roofing and/or sheet metal contracting business;

(d) be financially able to operate his business properly.

Section 2. No contractor shall submit an estimate price on any job, or submit a bill for his services, without retaining a record showing the true cost upon which his estimate was based or his charges were determined.

Section 3. No contractor shall sell or offer to sell labor, materials and/or services below the cost thereof.

(a) For this purpose, cost is defined as the cost of direct labor plus the cost of materials plus overhead as shall be determined by cost accounting methods recognized in the industry and approved by the Code Authority Committee.

(b) Since no business can continue to render service without a profit, a reasonable profit shall be added to the cost of materials, labor and overhead.

(c) On time and material and cost plus jobs, the contractor shall include an overhead expense of not less than 25 percent.

(d) No contractor or employer shall increase the pricing of any goods, labor and/or services sold after the effective date over such prices on July 1, 1933, by more than is made necessary by actual increases in production, replacement or invoice costs, or by taxes or other costs, and in setting such price increases or making new estimates or invoices to give full weight to probable increases in work and to refrain from taking profiteering advantage of the consuming public.

Section 4. No contractor shall use or substitute materials inferior in quality to those specified by the purchaser without the consent of the purchaser.

Section 5. No contractor shall use methods of fabricating, applying or erecting work not in accord with the applicable governmental laws, rules, regulations or building codes in force in the territory affected.

Section 6. No contractor shall induce or attempt to induce the breach of existing contracts between a competitor and his customer.

Section 7. No contractor shall make, cause or permit to be made or published any false or deceptive statements on or concerning the business policies, credit standing, ability to perform work, or labor conditions of a competitor.

Section 8. No contractor shall make any secret agreement with a purchaser concerning the terms of payment, rebate or special conditions not extended to all bidders.

Section 9. No contractor shall pay, give, or permit to be given to any employee or agent of purchaser, or prospective purchaser, a commission or consideration of any character, for the purpose of inducing or compensating for a sale with or without the knowledge of the purchaser.

Section 10. No contractor shall place blanket orders or future delivery contracts for the same material for the same job on contract with more than one concern when the total so ordered on contract is in excess of the material required for the job. Such orders or contracts shall contain sufficient information to identify definitely the job for which the orders are placed.

Section 11. No contractor shall undertake to complete a contract or job upon which another contractor has temporarily stopped work because of non-payment of amounts properly due, or the owner or his agent is found financially incapable of meeting the

agreed contract price; and in any event no contractor shall bid on the job until the original contractor shall have been paid in full for all labor and material purchased, fabricated or installed up to and including the date of stopping work, plus overhead and anticipated profit.

Section 12. No contractor shall accept any unlisted stock of any corporation or mortgage bonds in payment or partial payment of the contract obligation, or extras thereto.

Section 13. No contractor shall enter into a contract which provides for the leaving of any portion of the moneys due under the contract as surety for the guarantee period, or any portion of that period.

Section 14. It shall be a violation of the Code:

(a) to guarantee, or to issue a maintenance agreement of any form whatsoever, on any work for a period of more than two years, or to assume in such guarantee, maintenance agreement, bond, or otherwise, responsibility for damage to any structure or to the contents of any structure upon which any of the work described in Article II has been done;

(b) to join with any manufacturing concern, individual, corporation or firm as principal or surety on any bond, guarantee maintenance agreement, or otherwise guaranteeing the effectiveness of the work contracted for.

Section 15. Bidding Practices—No contractor shall in any manner engage in or be a party to the unfair practice known throughout the industry as "bid-neddling."

Section 16. The industry approves the "one-bid" policy. No contractor shall change his bid price except for substantial changes in the original plans and/or specifications, and then only to an extent consistent with the actual change or cost involved.

Section 17. No contractor shall submit a bid on any work after the closing time set for receiving bids or after other bids have been opened.

Section 18. No contractor submitting a combination or lump sum bid shall itemize his bid prior to receiving the contract for work included in his bid.

Section 19. No contractor shall accept contracts on a "fixed fee" or "cost plus" basis, with an upset price, protecting the owner against higher costs, but not protecting the contractor against losses.

Section 20. (a) Each Local Administrative Committee appointed, or approved by the Code Authority Committee to have supervisory jurisdiction of this Code in its territory, shall designate a depository for bids, which shall be a bank or trust company or other depository approved by the Administrative Committee.

(b) Contractors bidding on any job amounting to Two Hundred and Fifty Dollars (\$250.00) or more shall file sealed copies of their bids, and any revision thereof, with such designated depository, who shall hold same sealed and confidential, until after the bids have been opened.

(c) Each contractor bidding on such jobs shall indicate in his proposal to the purchaser that copy of same has been delivered in sealed envelope to the designated depository.

(d) Upon notification that the contract has been awarded, or that the bids have been opened, the depository shall deliver all copies of bids for such work to the Local Administrative Committee having supervisory jurisdiction. Such Committees shall open all bids. Each bidder shall pay to the Local Administrative Committee his equitable proportionate share of the cost of handling such information, but not over One Dollar (\$1.00) for each bidder.

(e) Upon the request of a bidder, the Local Administrative Committee shall appoint a Committee of Review, preferably not bidders on that job, which committee shall be empowered to call upon all the bidders for any data deemed by the committee necessary to determine whether this Code of Fair Competition has been violated.

(f) In the event the Committee of Review shall find that this Code of Fair Competition has been violated their findings on the violation shall be reported to the Local Administrative Committee, for such action as the Local Administrative Committee shall deem proper in accordance with the National Industrial Recovery Act.

(Continued on page 47)

Sheet Metal Roadside Stand

THIS big cream can, located in Los Angeles, belongs to J. H. Cline and is unquestionably one of the most noticeable wayside refreshment buildings on a busy thoroughfare.

Built of heavy metal over an angle iron frame moored, in turn, to a rigid concrete floor, the building is of sturdy construction. Around the top, under the rim of the "cover" is a row of flood lights that throw their light downward and illuminate the whole cream can at night. Around the exterior is a row of lights that serve as pegs on which a dozen or more real cream cans are hung.

The great can stands nearly thirty feet high and is about twenty feet in diameter. Doors in the sides rise to give room for counter service. The attic in the can above the ceiling makes it cool always summer and winter. A girl dressed like a milk maid waits on customers who desire curb service.

The big cream can is a wonderful advertisement in itself not only because it is so extremely different from everything else along the highway but because it is able to cry its own products. Ice cream, malted

The contractor looking for profitable specialties to fabricate and sell can get some good ideas from California where metal sheathed roadside stands are popular. This is a typical stand.



milk, milk shakes, sweet milk and buttermilk form leading items on the bill of fare.

The big cream can is equipped with kitchen, refrigeration, and all other conveniences. The construction cost was much below that of a frame, concrete, or stucco build-

ing of like dimensions, Mr. Cline says. The ease with which it can be transported from one place to another is a consideration in a wayside place, this particular cream can having already been moved once, a distance of ten miles and more, from Whittier to Los Angeles.

Steinberg Sells Beer Coolers *(Continued from page 15)*

With reference to the length of the coils used, 60 feet was demanded by most of the people who previously had been in the beer business and by others who took it for granted that that was the proper amount required. The company experimented considerably and found that for ice refrigeration 45 feet for each beer coil and 20 feet for each water coil was ample to give a reasonably steady flow of cold beer, maintaining a temperature of from 40 to 45 degrees.

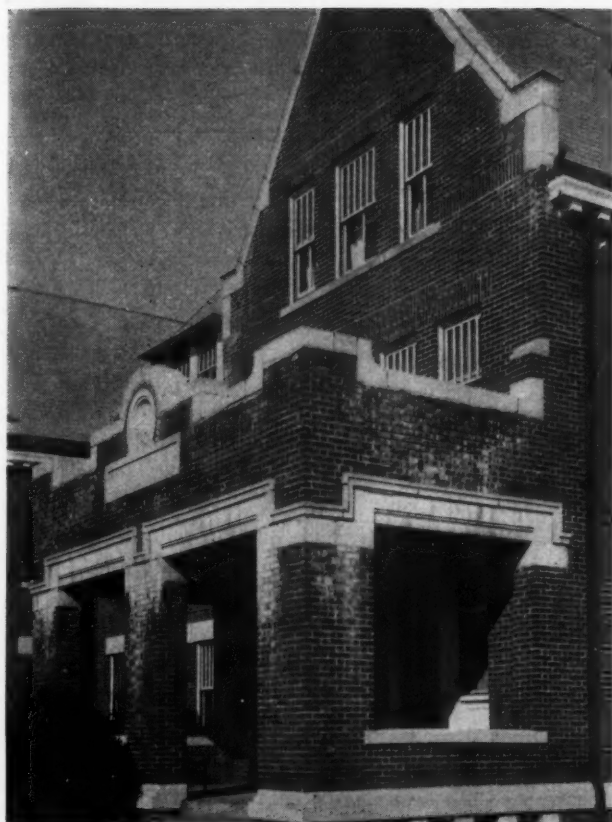
Where a great rush period was experienced in the dispensing of beer, it was far safer to install the additional 15 feet of coil for a guar-

anteed temperature on heavy draughts. Thirty feet was found absolutely inadequate and was only suitable for use in a place where beer was only drawn occasionally and then only two or three glasses at a time.

For electrical refrigeration it was found that it was advisable to install a minimum of 50 feet and at no time over 60 feet being necessary, particularly because of the fact that it is advisable to maintain the temperature of the liquid in the coils as uniformly as possible in order to cut down the time of operation of the compressor and to economize on electric current used.

Some advertising has been done, consisting mostly of direct mail using letters and enclosures showing various units, lists of specifications and photographs of the units.

"We feel reasonably sure," say firm members, "that the possibilities for additional future business in this line are unlimited, providing the manufacturer keeps in constant touch with conditions and changes in the methods of beer dispensing. We are continually improving or experimenting with our units and we believe we have as attractive a line as any in the country."



Thru Wall Flashings— A Cure For Moisture Penetration

By
Paul G. Davis

Fig. 1

Moisture penetration has ruined the gable and porch copings and worked down to the lintels. Water has decayed the roof rafters.

ONE of the most serious problems confronting the building owner today is the prevention of infiltration of water into masonry walls. Such seepage results in efflorescence on the exterior face of walls, the gradual destruction of the wall structure (especially copings, cornices, balustrades, etc.) and, when permitted to progress, the eventual destruction of interior ceiling and wall decorations or even the fall of the plaster itself.

This destructive action is caused by several contributing factors. Among them are the use of heavily vitrified brick whose surfaces are not sufficiently porous to be completely bonded with the mortar; the use of some types of cement mortar or their mixtures which act as water carrying strata; the haste and lax laying of brick by stone and brick masons; and other factors such as natural causes.

The average layman or owner when noticing a leak immediately blames the roof. When the roofer or sheet metal contractor is called in he often has to expend much time and money proving that the trouble is not in the roof or wall flashings, but lies either in the absence

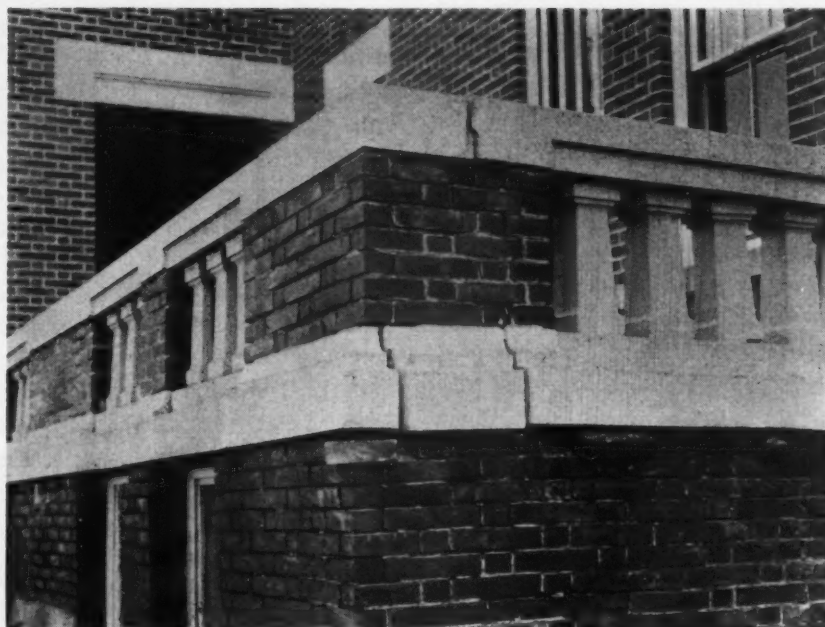


Fig. 2

Water working between coping stones penetrated the corner brickwork and later the floor molding course and the brickwork below the porch floor. Such progressive disintegration can be prevented with proper thru-wall flashings.

of through-wall flashings or the seepage of water behind cap flashings where no wall flashings are used to prevent capillary action.

Contractors generally find that the best solution to the problem is the use of through-wall flashings. Most of these flashings are mechanically keyed metal flashings ex-

tending through the masonry walls, retaining a complete mortar bond and extending protection against seepage to the outside of the building. Such flashings are set in a wet mortar joint without soldering, with each piece interlocking. Application is rapid since sections can

(Continued on page 26)

Automatic Controls

This article brings to a close the discussion of a control system wherein the room thermostat controls the fire through draft and check, an independent fan control starts and stops the fan and a limit control, in series with the thermostat, checks room temperature over-run. The article sums up the good and bad points of this system.

It is not out of place here to say a word about fuels. Frequently we have heard contractors say—"I can't use these low settings (or those high settings) because my customer uses _____ fuel." The inference is that some fuels require different settings than others.

Let us see why and if this is so. Roughly speaking, there are three types of solid fuel—coke, hard coal and bituminous coal.

Coke, when properly sized for the furnace, possesses the characteristics of rapid pickup and large heat generative ability, coupled with an equal ability to die down or out quickly. This being so we must set our limit control so that once started the fuel bed will not run away and the rapid, progressive combustion will be checked early. Coke also works best when the combustion is as nearly uniform as possible. To handle coke, then, our "high" limit control should be as close to the fan "on" setting as possible and the "low" limit setting should be close to the "high" limit so that combustion will be as nearly uniform as possible.

Hard coal, on the other hand, is comparatively hard to ignite, but once started burns freely. Under all but very severe weather the limit control with hard coal should probably be set higher than for coke. With hard coal it probably would be best to keep the limit control "low" setting as close to the "high" setting as possible in order that the draft might open at more frequent intervals in order to maintain fairly uniform combustion. With hard coal somewhat closer attention to changing limit control settings according to outside weather is required.

Bituminous coal covers a wide range from volatile types to types approaching hard coal. In general, most bituminous coal ignites easily, accelerate with fair rapidity and burn freely. The limit control should be adjusted to the particular type of bituminous used and some experimentation with each system should be expected.

Adjust Draft Door

Many contractors have never considered the adjustment of draft doors for different types of fuel. With coke or readily burning soft coal a small draft door opening is all that is required. On the other hand, slow igniting and burning coals should have wide open draft doors. This point is worth remembering when trying to adjust combustion to house and equipment needs.

Here's another point to be remembered in setting the "high" point for the limit control. We must keep in mind in selecting our setting that the number of air changes per hour which we are using exerts a very noticeable effect on the temperature of air which we introduce. To be specific—if we use three or four air changes per hour we can safely reduce our air temperatures to 120 to 140 degrees. But if we step up the air change to six or eight per hour then we are handling air at higher velocities and in larger quantities and 120 to 140 degree air may feel chilly.

So far we have said little about the "low" setting of the limit control. In most instruments this difference between "high" and "low" is adjustable at will. The reason for making instruments adjustable is to provide control over the num-

ber of draft door openings per period of time.

Referring again to our questionnaires, we find that the majority of installers set the "low" temperature about 50 degrees below the "high." A few report differentials as much as 100 degrees, but 50 degrees seems popular.

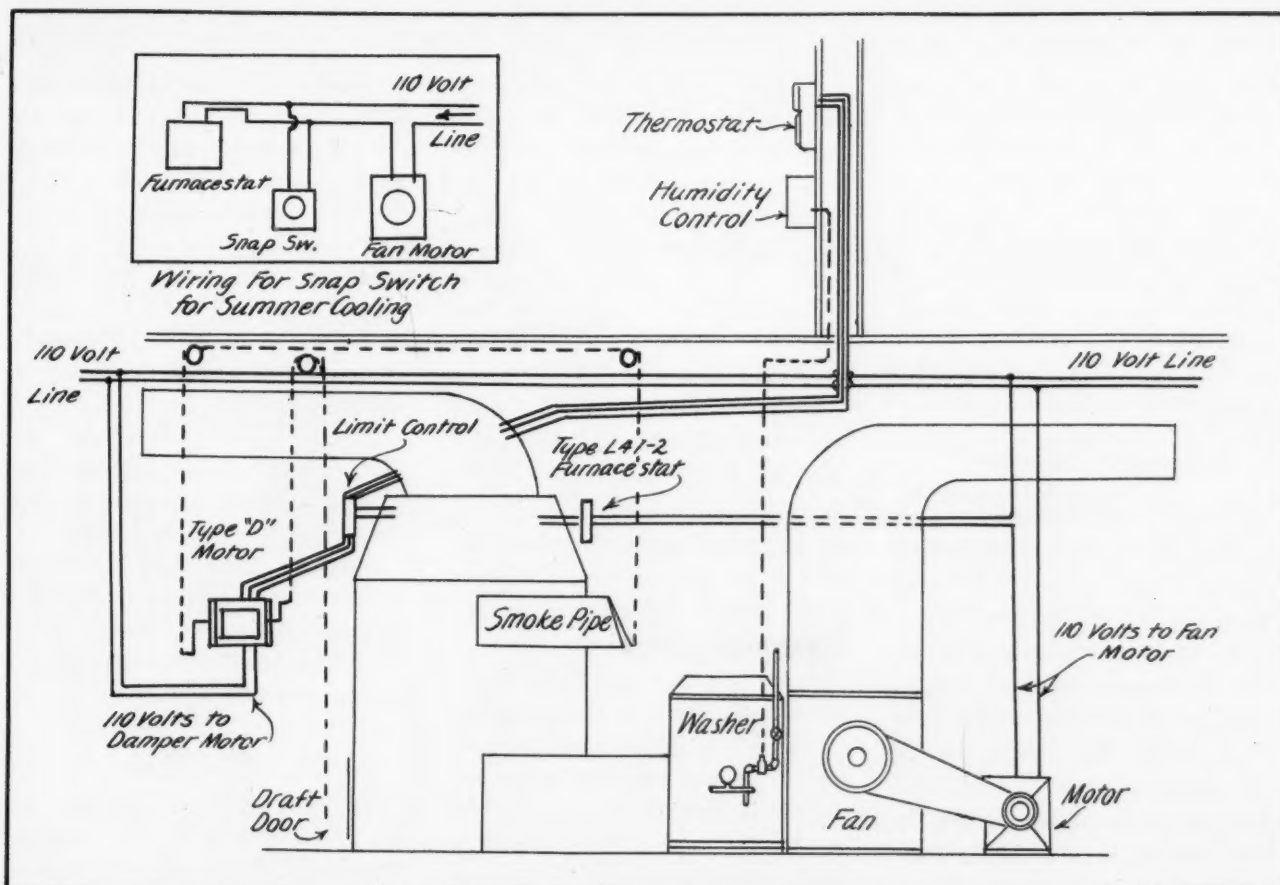
The reasons given for selecting a 50-degree differential might be summed up as follows—"We don't know exactly why we use this differential, it was recommended."

Actually there are only a few points to keep in mind. First if we use a high "high" setting, say around 300 degrees, we practically have to use a wide differential (50 to 100 degrees) in order that the furnace has a chance to cool down before we return control of the draft to the room thermostat. Therefore, when high "highs" are used it is essential that we use a wide differential or the room thermostat will seldom influence the combustion rate.

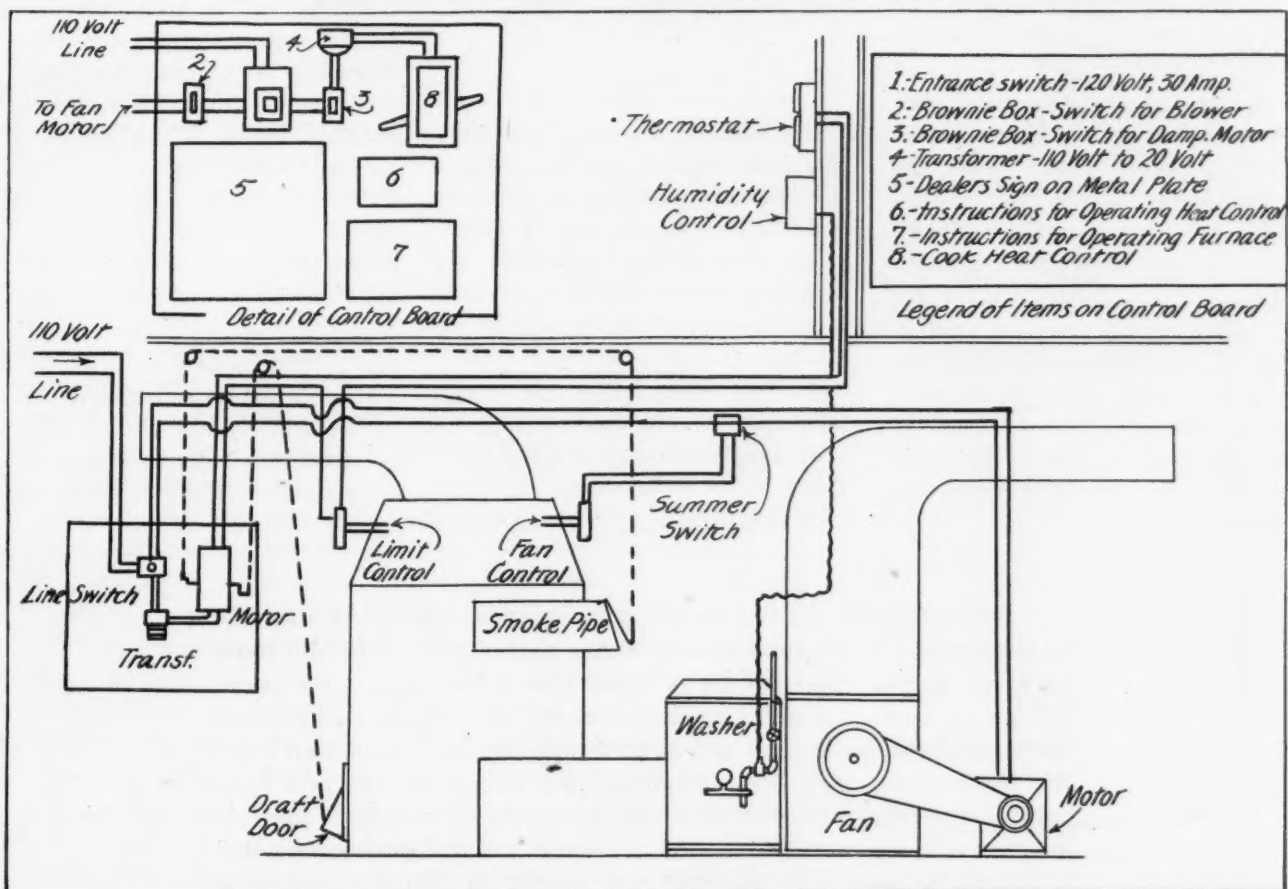
On the other hand, if we have selected low or comparatively low "high" limit control settings and anticipate frequent operation of the drafts our "low" setting can be within 15 or 25 degrees of the "high" setting.

The advantages of close settings between "high" and "low" are mainly that with a close setting the draft is opened and closed at more frequent intervals. This frequent opening and closing of the draft means that combustion is kept more nearly uniform (which is desirable) and that our fire does not have a chance to run away.

While it is true that close settings may stop and start the fan several times when picking up, if the fan and furnace are in balance, the ad-



In the hookup above the independent fan control prevents cold air from being blown into the house and permits the fan to run until casing temperature is down to fan "off." The room thermostat controls the fire. The difficulty with this system is that room temperatures may be over-run. The apparatus shown is by Minneapolis-Honeywell Co..



The George F. Wheelock Co., Birmingham, Ala., uses the hookup above with Cook Electric Co. and Penn Electric Switch Co., controls. The feature is the control board on which is placed the apparatus and full instructions for operating the furnace and the control system. The dealer's name is also shown. The hookup is the same as above

vantages of close control over the fire especially with low settings seems to have aroused the enthusiasm of a large number of contractors and engineers who have tried out the scheme. If there are real advantages to the plan it would seem that other contractors who are using high settings and wide differentials should give the newer plan consideration.

Owner Cooperation

With this control system quite a bit of the satisfaction to be secured from the system rests with the home owner and his willingness to cooperate to the extent of raising the "high" setting of the limit control when the weather gets around zero and lowering the "high" setting when the weather turns mild. Of course, when the owner changes the "high" setting he also changes the "low" setting, but does not change the differential. No change is made in the fan control settings.

Many contractors state that they do not want the owner tinkering with the controls and probably in the long run this is a sound idea. Nevertheless, so much more satisfaction can be gained when the owner works with the contractor intelligently that the trial is worth considering. Where the contractor deems owner changes out of the question, there remains the possibility of the installer making the changes each season or choosing some setting which will not be equally good in severe and mild weather but which requires no changing.

A good many contractors, engineers and the University of Illinois have tried the experiment of substituting a stack control for the bonnet limit control. These investigators have found that all types of instruments do not work equally well in the stack. Gases, soot, heat have their effects so stack controls must be chosen carefully.

Nevertheless, the stack control has some advantages. The principal one is that the temperature in the stack is a truer indication of the status and combustion of the fire than is the temperature of the air in the bonnet. Of course, temperatures range much higher (for instance a bonnet temperature of 160 degrees may mean a stack temperature of 300 to 500 degrees) depending, of course, on whether or not the fan is running.

Like the bonnet limit control, a stack control must also be changed in its setting to conform with outside weather if best results are obtained. Unlike the bonnet control location is not so critical.

Conclusion

In conclusion we might say that this second control system possesses the following good and bad points:

- 1—When properly set it practically prevents run away fires.
- 2—Due to this fire check, room temperature over-run is reduced or eliminated.
- 3—Fuel consumption and combustion are under close control.
- 4—Combustion rate is fairly uniform.
- 5—Uniformity of temperatures

between rooms can be maintained satisfactorily by increasing the air changes per hour without sacrificing good operation or control.

6—The system is simple to install and wire.

Its disadvantages are principally:

1—There is no safety control to start the fan should drafts remain open after the room thermostat is satisfied.

2—Unless low settings of the limit control are used high flue gas temperatures will occur and flue gas temperatures will vary greatly.

3—Each individual installation requires some experimentation before final settings are chosen.

4—The home owner should cooperate in changing settings.

Set Low

And generally speaking, our fan "on" should be as low as possible, that is not more than 15 degrees above the register air temperature we are working with or lower if possible. Our fan "off" setting should be as low as possible and still prevent cold air from being blown into the rooms. Our "high" limit control should be as low as possible, ordinarily not exceeding the fan "on" setting by more than 25 to 50 degrees even in severe weather. Our "low" limit control should be close to the limit control "high" setting so that frequent draft door openings will occur as this offers better control over the fire. And lastly this system requires some intelligent study of each installation and a willingness to experiment until the right combinations of settings are discovered.

Beginning with the November issue our third control hookup will be discussed. In this third hookup closer control over the room temperature, so that there will be no more than a two degree variance, will be our aim. To get such close control we will make the room thermostat our master unit and control both fire and circulation from the thermostat. This is accomplished by wiring the fan and limit control in parallel with each other and wiring the fan and limit controls in series with the room thermostat. The result is that each instrument is forced to work with all other instruments so that the system is well synchronized.

MASON FURNACE CO.
 CONSOLIDATED WITH
NORTHWESTERN FURNACE SUPPLY CO.
 LICENSED AND BONDED BY THE CITY OF MINNEAPOLIS
 2945 Lyndale Ave. S. REgent 8268

Furnace Vacuum Cleaning
 Special--3 Operations for **\$1.49** Operations 1-3-5
 only Cash Price
Your Furnace or Boiler Cleaned by All-Electric Vacuum Method

SAVE MONEY
 LABOR SAVING
 EQUIPMENT
 and
 EFFICIENT WORKMEN
 ENABLE US TO
 QUOTE LOW PRICES



LOW PRICES
 PRICES ON HEATING
 WORK ARE DOWN
 INSTALL THAT
 NEW FURNACE
 or
 REPAIR THE
 OLD ONE NOW

New Low Prices for Expert Work
 HUNDREDS OF SATISFIED CUSTOMERS HAVE USED THIS SERVICE

HOT AIR FURNACE

- 1 Remove soot from furnace with vacuum machine.
- 2 Scrape off scale.
- 3 Vacuum clean smoke pipe.
- 4 Vacuum clean lower chimney.
- 5 Remove ashes from grates and ash pit.
- 6 Vacuum clean outside furnace casing.
- 7 Vacuum clean outside of hot air pipes in basement.
- 8 Brush and paint front of furnace.
- 9 Cement smoke pipe in chimney.

NINE (9) OPERATIONS FOR \$3.75
 Cleaning inside of warm and cold air pipes, 50c each

FOUR (4) OPERATIONS, Nos. 1-3-5-9 \$2.00

HOT WATER FURNACE

- 1 Remove soot from boiler with vacuum machine.
- 2 Scrape scale.
- 3 Vacuum clean smoke pipe.
- 4 Vacuum clean lower chimney.
- 5 Remove ashes from grate and ash pit.
- 6 Vacuum clean outside of boiler.
- 7 Inspect boiler for leaks.
- 8 Brush and paint front of boiler.
- 9 Cement smoke pipe in chimney.

NINE (9) OPERATIONS FOR \$4.50
FOUR (4) OPERATIONS, Nos. 1-3-5-9 \$2.50

SATISFACTION GUARANTEED
 This cleaning will be done by thoroughly experienced furnace men
 using the latest vacuum cleaning equipment.
 May we vacuum clean your furnace now? Phone us Regent 8268
 WHEN PHONING PLEASE MENTION MY NAME

The first page of the four-page leaflet
 which has been mailed to 150,000
 names

Making Minneapolis Furnace "Conscious"

By W. A. Mason
 Mason Furnace Co.

THE heating industry, in my opinion, offers the best possibilities for commercial success that are to be had in the country today. I do not make this statement because I happen to be in the retail furnace business, but because while every other line of major industry is well advanced in modern merchandising methods, the heating industry from foundry to retailer is today just entering the kindergarten of merchandising.

We, as a nation, have been made automobile, halitosis, bathroom, and B. O. "conscious" to the nth degree during the last decade, but have we ever heard of any one being "furnace conscious" in the past ten years? Much can be said for and against the methods by which we gained this "consciousness," but after all is said and done these methods brought results which were undreamed of a few years back.

Along in 1930 I discovered that my business was not gaining ground and I determined to find out why.

After a little home made research I decided that each family had just so many dollars to spend and if somebody else made them "conscious" of their car, clothes, furniture, etc., before I had a chance to see them on furnace business, I was not going to get any of these dollars as none would be left.

How to appeal to these families to get them to spend a portion of their money on their heating system was a real problem. I knew that first I would have to get them to give their heating system a little thought, in other words, make them furnace "conscious." We had a choice of appeals and a choice of methods but what choice would be best for my business? We could base our appeal on the benefits resulting from cleaning, repair or replacement, and we could gain attention to these appeals through the medium of the newspaper, the phone book, direct mail, direct solicitation.

To be frank, we tried all these

MASON FURNACE COMPANY

No. 712 Date 2/23/33

Name John Doe
 Address 3740 Pleasant Ave. S.
 Phone Re 7726

Number of Rooms _____ Tons of Coal _____
 Name of Furnace Northern
 Size Number 2244
 W. A. 14 _____ 12 _____ 10 _____ 9 _____ 8 _____
 C. A. _____
 Condition of Fire Pot _____
 Grates _____ Smoke Pipe _____
 Work Done: _____

Cleaning Order

Description of Work:
 New fire pot
 3-ft. 8" smoke pipe
 2-8" 4 pc.

Sale price \$4.16
 Material \$22.10
 Labor \$6.90
 Comm. \$4.92
 T. C. \$33.42
 G. P. \$10.74

The solicitor's card is filled in and filed in the envelope with duplicate information on the front as shown. This envelope is keyed and numbered and furnishes a complete history of the furnace

methods of appeal and attention-getting in various combinations until we got the right one.

The right combination for us is the appeal for furnace cleaning at a low price accompanied by direct solicitation by solicitors who use especially prepared four-page folders calling attention to our bargain cleaning offer and describing our repair service, parts service, and our new equipment line. In other words, to land a prospect we must get into the basement and the bargain cleaning offer is the "leader" which gives us the entree.

I want to emphasize that this bargain cleaning "leader" is in no sense a "racket." It is a distinctly legitimate way of opening new accounts and adding a growing list of customers to one's books. If it is not treated as such it will defeat its purpose and demoralize one's business. One must remember that bargain cleaning is not a way to quick profits, but a way to get customers who in time will give you valuable repair and replacement business.

This is a typical newspaper advertisement which gave fair results

Our furnace cleaning service is unitized and separated into distinct operations. One service is sold at \$1.49 and includes removing soot with an electric vacuum machine, vacuuming the smoke pipe, and removing ashes from grates and ash pit. Another service consisting of nine operations on a warm air furnace costs \$3.75. This service is a very complete one for the custom-

ers who want a very thorough job. This same service for a hot water plant is sold for \$4.50. If a customer so desires he can have any combination of operations at correspondingly low prices.

These services are advertised in the front page of our folder of which 150,000 were distributed by our solicitors last season. Through the use of our special cleaning offer

HUMIDIFIERS—HEAT SAVERS FAN HEATING

You may now purchase equipment at low cost that will enable you to enjoy a healthy, invigorating climate in your home all winter.

ENGINEERING SERVICE

Is the air in your home too dry?
Are the floors drafty and the rooms hard to warm?
How much heat are you wasting up the chimney?
Without obligation our engineer will call at your home and make the tests necessary to answer these questions.

Phone us or see our display. The most complete in the northwest—Open evenings

MASON FURNACE CO.

2945 LYNDAL SE.

RE. 8268

EXPERT SERVICE AT NEW LOW PRICES

Furnace Fans and Blowers

Winter Heating

Summer Cooling

Do you have rooms that are hard to heat or a home that is drafty and slow to warm up in the morning? A fan or a blower installed on the furnace you now have will eliminate these troubles.

SUMMER COOLING

A fan or a blower keeps a cooling breeze flowing through your home during the hot months. Why not have this comfort?

Fans not only give you more comfort in your home winter and summer but decidedly reduces your winter fuel bill and prolongs the life of your furnace.

Many an apparently hopeless furnace has been made to heat and give good satisfaction by installing a fan.

PRICES ON FANS AND BLOWERS ARE NOW WITHIN THE REACH OF EVERYONE.
ESTIMATE FREE

AIR MOISTENERS

We carry a complete stock of air moisteners for hot air, hot water and steam heating plants.

Moisture in liberal quantities is necessary if healthful heat is to be maintained in the home. Dry heat is harmful and may cause sickness. It not only dries up the woodwork and furnishings of the home but actually takes moisture from the body, being responsible to a large extent for the sickness that is common and prevalent during the winter time when we are living in artificially heated air.

LET US TELL YOU MORE ABOUT HUMIDITY

Prices: Hot Air, \$10.50 and Up. Hot Water and Steam, \$65.00 and Up.

Phone Us Regent 8268

**A Dirty Furnace Refuses To Heat
Have Your Furnace Cleaned Now**

FURNACE REPAIRS

No Charge Made for Inspection and Estimate on Furnace Repairs

Our repair department is one of the best equipped in the Northwest. We are in a position to supply and install parts for all makes and kinds of heating plants. Our special equipment and large volume enable us to quote low prices.

SMOKE PIPE

We stock 24 and 26 gauge smoke pipe in all sizes. Smoke tees, smoke elbows and special fittings. We recommend the 24 gauge pipes. It is heavier and lasts longer.

FIREPOTS

FOR ALL MAKES

of

FURNACES

Carefully installed by experienced furnace men.

GRATES

One bar or a set. Hot Water-Hot Air. Many a pound of coal has been lost by warped or broken grates. Let us check your grates now.

AT YOUR SERVICE

Heating Materials and Experts at Reasonable Prices

SMOKE DOMES

Hot Water Boilers and Hot Air Furnaces. Doors and frames to replace warped and cracked feed door and clean out doors on hot water or steam boilers.

RECOVERING WITH ASBESTOS

Hot Air Furnaces or Hot Water Boilers. No need for hot basements. Conserve heat. Have your furnace or boiler properly insulated.

FURNACES CEMENTED AND RESET

You need not have a home fouled by smoke, gas, soot, and ash dust. It is dangerous. Phone us for our low price on recementing.

Satisfaction Guaranteed

A little repair work done in time will, in many instances, save costly replacement of heating equipment later. Now is the time to have your repairing done. Phone us for estimates, REgent 8268.

Your Furnace Should be Cleaned at Least Once a Year

FAULTY INSTALLATION.

We specialize in correcting faulty installation of all makes of furnaces. A minor change will often make a poor heating system a good one. No charge for estimate.

COLD AIR RETURNS

In past years the majority of furnaces were installed with a shortage of cold air. This condition makes a house hard to heat and shortens the life of the furnace. Our experts will check your heating plant without cost.

WARM AIR RUNS

Have you a room that is not as warm as you would like it, a room that is now without heat. A new or additional warm air pipe can be installed at low cost.

Here are the two inside pages of the leaflet. The general idea of the leaflet is to give the home owner complete information on the many services the Mason company is prepared to offer. These leaflets are left with the owner by the canvasser who calls to solicit work, especially "bargain" cleaning. Read what Mr. Mason says about "bargain" cleaning in his story

with direct solicitation we cleaned 4,700 furnaces last season and did work in 7,000 basements all told.

When a solicitor takes an order he goes down into the basement and fills out a card with the customer's name and address and detailed information regarding the heating plant and sets a specific time that is agreeable to the housewife for the cleaning of the furnace.

We are very careful to see that these appointments are kept and we keep a spare man and a machine available at all times so that in case of necessity he can rush out and take care of a job the regular man isn't able to keep. The solicitor turns in these orders at the end of the day and as they are turned in they are given a number and routed for the cleaning men the following day.

Let me say a word about our cleaning men. We use very high type men to do our cleaning work. They are clean about their person and do not dirty up the basement in doing their job. They are intelligent and if in cleaning the furnace they discover something that is in need of repair they call the lady of the house and suggest that the repairs be made. Customers have, for some reason or other, much more confidence in a workman than in a salesman and if the workman is intelligent he can secure many profitable jobs or make it easier for the salesman.

We do not intend to show a profit on our cleaning business and any cleaning losses are charged to advertising, but we do very good cleaning work because our future business depends to a great extent upon satisfied cleaning customers. To us our cleaning is as important as the sale of a new furnace as we must gain the good will of a customer on this small job if we are to get the large job. A check of our records has shown that time after time large repairs and even new equipment sales have come to us unsolicited just because we stake our reputation as furnace men on what our boys call "the \$1.49 present."

SAVE YOUR FURNACE—CUT COAL COSTS
Soot and Dampness Destroys All Metal Parts
Soot Wastes Heat! It is to Your Interest to
Clean Your Furnace Now!

We have made arrangements with the Northwestern Furnace Supply Co. to inspect and clean furnaces at the rates on the attached card. Only thoroughly experienced men, using the latest Vacuum Cleaning equipment, employed. Satisfaction guaranteed.

REEVES COAL & DOCK CO.
 210 SOUTH SIXTH ST.
 MINNEAPOLIS, MINN.

Postage
 Will be Paid
 by
 Addressee

No
 Receipt
 if Mailed
 in
 United
 States

BUSINESS REPLY CARD

Post Card Form No. 1057 Rev. 10/12/32 U. S. D. C. Minneapolis, Minn.

REEVES COAL & DOCK CO.,
 210 South Sixth St.,
 Minneapolis, Minn.

This is the return face of a mailing card distributed in conjunction with a coal company's sales efforts. The Mason company has solved coal dealer's competition by doing the coal man's cleaning

The card which the solicitor turns in is numbered and routed and given to the cleaning man the following day. After the cleaning is completed, including any repairs that may have been sold, the cleaning man returns the card on which all notations of repairs, etc., have been made. At this time bills for materials, if any were used, are turned in with the card. The card and slips which may accompany it are placed in an envelop which bears the same number as the card. The face of the envelop is filled in with pertinent information on the job as to the selling costs, material costs and labor costs and then keyed into a master index and filed by numbers.

The inside of the return card lists the different cleaning services offered, tells just what each service includes and the price. The coal man also advertises his coal prices and brands. This gives good advertising to both firms and reduces the cost to each

Each number must be accounted for.

In this way we have a cost record and a customer file all in one, which saves a great deal of detail work. At present there are over 10,000 names in the file and with the information which goes with each name we are assured of real prospects for the coming years. It is no trouble to check over any one of the envelops to find out the condition of the heating plant, when we worked on it last, what was or would be needed to restore its efficiency, and when the customer would be in the market for the work.

When the card shows that equipment is needed one of our salesmen, all of whom are qualified heating men, calls on the customer. Our salesmen are trained to see how much and not how little they can sell the customer. They make them buy because they want to and not because they have to. There isn't a lot of romance to a furnace and a customer never thinks of it unless it isn't working right and then only as a necessary evil that keeps him poor trying to buy fuel for it.

It has been standard practice for furnace men during the past 35 years to sell as little as possible for as much as possible and never enlighten any one as to the fundamentals of heating. Therefore, it is that much easier for our men, who instead of talking about so much iron, talk about comfort, ease, health, in fact everything but so much iron by weight. We find it

<input type="checkbox"/> Hot Air or Hot Water Furnace —3 operations, special \$1.40	PRICE LIST—The following prices effective Sept. 1, 1932, and subject to change without notice:
<input type="checkbox"/> Clean Hot Air Furnace —9 operations \$3.75	
<input type="checkbox"/> Hot Water or Steam Boiler —9 operations \$4.50	
<input type="checkbox"/> Warm and Cold Air Pipes (State Number.....) Each .50	
SMOKEPIPE—Best quality 26 gauge galvanized steel smokepipe— 8-inch, per foot 15¢ Elbows 33¢ 7-inch, per foot 17¢ Elbows 39¢ Installation service \$1.35 (Anywhere in city)	KIND—Tons 1/2 Tons FORD COKE—Stove and Nut \$11.85 \$8.70 " Pea 10.00 6.85 ANTHRACITE—Egg \$16.00 \$9.50 " Stove 17.15 9.35 " Nut 16.00 9.20 " Pea 14.00 8.20 " Buckwheat 13.00 7.30 ARKANSAS ANTHRACITE: " Furnace and Egg \$14.85 \$7.90 " Stove and Nut 14.75 8.15 PETROLEUM COKE \$15.15 \$9.35 REEVES CARBON (Superior) 15.00 8.25 REEVES CARBON (Unsuperior) 14.00 7.75 BRIQUETS—Stettin, Bavaria 12.00 7.25 and P. & A. 12.00 7.25 POCAHONTAS—Lump or Egg \$11.00 \$8.70 " Stove and Nut 11.75 6.65 " Pea 11.25 6.40 " Mine Run (Dom.) 10.25 5.95 NORFOLK—Lump or Egg \$11.00 \$8.70 " Stove 9.75 6.60 BANNER FURNACE, ELKHORN, BEACON BLOCK— " Lump and Egg \$10.15 \$9.85 " Stove 9.20 5.35 PEECOAL \$9.85 \$5.20 CANNEL COAL 14.00 7.75 FRANKLIN COUNTY— " Furnace 6/3 \$9.00 \$5.65 " Small Egg 3/2 8.70 5.60 " Stove 2 1/2 8.00 5.20 COVCO (Northern Ill.) 6/3 8.50 5.00 COVCO (Northern Ill.) 3/2 8.25 4.90
REEVES COAL AND DOCK CO. 1728 WASHINGTON AVE. NO. HYland 6231	

easy to sell accessories such as fans, blowers, air conditioners, humidifiers and the like. In other words, we insist that our men use modern merchandising tactics and borrow a leaf from the auto salesman's manual.

To be successful in modern merchandising is to hold an open mind on new ideas. I mention this because I wish to describe an idea brought to us by a young fellow who was a distinct outsider in the furnace business. He walked into my office one day and announced he represented the Flintkote Corp. of Chicago, and also Toch Bros. of the same city, and was selling maintenance products and asphalt emulsions. I gently reminded him that we were in the furnace business, but he replied that he knew that and, in fact, had taken pains to find out that information and also that we, in his opinion, were the best operators in town.

He asked me if I realized that the basement was the most costly part of the house and that the people derived the least benefits from it. Also that these basements were generally damp, dirty, and musty and that no one seemed to know whose business it was to go after the job of cleaning them up and turning them into pleasant living quarters. Well, it turned out that he had developed a use for his asphalt emulsion as a damp proof coating for domestic basements over which could be applied a white finish coat through which the asphalt would not bleed. This treatment removes dampness, dirt, and mustiness and left the basement walls and ceiling bright and white. He also had a special floor paint and flooring material which would make basement floors very attractive.

I had been meeting a lot of resistance in trying to sell air conditioning humidifying units to cus-

tomers where their basements were a mess, to put it plainly, and his idea has worked out satisfactorily in overcoming this resistance.

Certainly, the entire basement modernizing business belongs to furnace men and if this business is aggressively pursued it is not only profitable in itself but breaks down the resistance against the sale of modern heating equipment.

With the new equipment plus the new flat piping for warm air systems waste basement space can be turned into cheery living quarters which are becoming more and more desirable in these times of the gathering of the clans or consolidation of relations in one home.

I wish to reiterate that we are not price merchants and handle the best lines of equipment available, and we differ from the average operator only in that we use modern methods of merchandising to enable us to stay in business.

Thru Wall Flashings Prevent Moisture Penetration

(Continued from page 19)

set as fast as necessary without soldering, hammering, or special fitting. Such flashings guarantee against infiltration through the masonry walls.

The damage that can be caused by faulty flashing is illustrated by the accompanying series of pictures. No. 1 illustrates the damage by seepage through the coping into the walls, causing the joints to disintegrate. No. 2 shows a low piazza about ready to fall. Shortly after this picture was taken, the Superintendent of the School, to test this damage, pressed upon the interior side causing it to fall into the courtyard. In picture No. 3, disintegration may be noted throughout the entire parapet and the walls were bulging at several points.

This entire building was repaired at a great cost, a cost which would certainly have been eliminated had the proper through-wall flashing been used at the time of its erection.



Fig. 3

Repair work necessitated by water penetration is expensive and unnecessary. In this Industrial School building, Manchester, N. H., much of the masonry and brickwork had to be torn down and flashings applied.

In these days when repair and maintenance work are so closely tied up with building operations and all owners are compelled to keep constant check on structural conditions, many contractors have

found that the story of the preservation of buildings and the reduction in danger from water seepage through the use of correctly placed through wall flashings finds ready listeners.

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Automatic Heat *and* Air Conditioning Section

..... WE announced in the September issue a program covering the problems of repairing, replacing and remodeling. Two general phases of the problem are evident—first the engineering required to insure satisfactory systems and, second, the sales program required to implant our ideas in the prospect's mind.

..... With this issue we begin discussion of both phases. In the Automatic Heat section the first technical article is presented. This article deals with the problem of selecting the proper register air temperature and velocity. These must be the basis for all calculations.

..... Future issues will deal with baffling, air distribution, humidifying, cleaning, fans, controls, leaders, ducts and other matters.

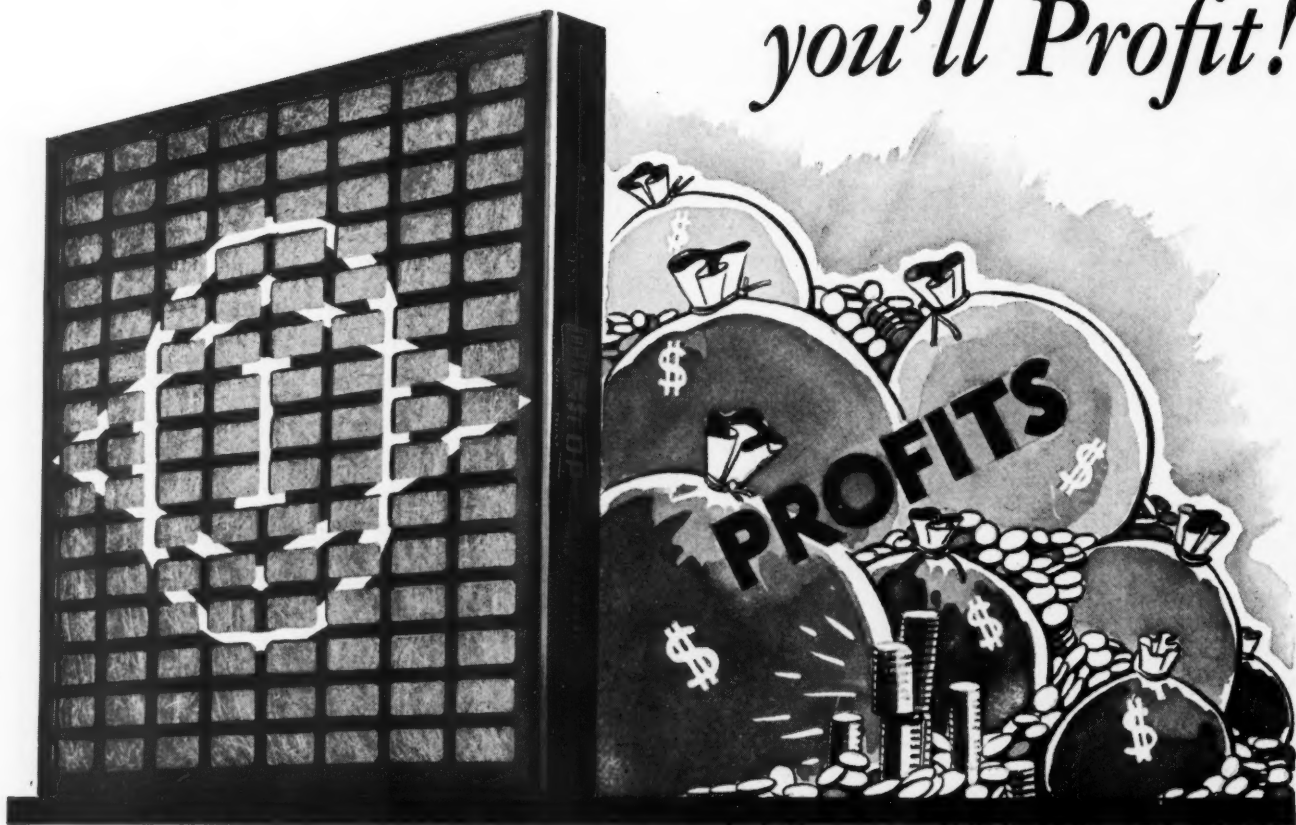
..... In the regular reading section the problem of selling is outlined together with the products we have to sell. Future issues will take up the sale of specific products and show how contractors have followed plans which brought success.

.....



Get behind the DUSTOP FILTER—

you'll Profit!



● Eight million new jobs to do at a profit—within the grasp of every furnace dealer who gets behind the Dustop filter and *pushes*. That is the extent of the tremendous home market the Dustop Glass Wool Air Filter opens to you—offering *clean air* to every warm air furnace owner. The warm air furnace—equipped with Dustop filters—gives *cleanest* heat. Just think what protection to family health—what savings in cleaning labor and expense—what luxury in clean air comfort you offer your customers through Dustop filter installations.

The Dustop Filter effectively fills every air filtration need. *High Cleaning Efficiency*—Dustop removes from circulated air all (96% to 98%) dirt, dust, soot, lint, hay fever pollens, bacteria and other impurities. *Lowest Cost*—Dustop is installed at lowest first cost and lowest upkeep expense. *Easy Maintenance*—Dirty filters are simply discarded and inexpensively replaced with new ones.

The many Dustop advantages pave your way to profits in warm air furnaces. Write at once for complete information. Owens-Illinois Glass Company, Industrial Materials Division, Toledo, Ohio. (Dustop is assembled and installed in Canada by General Steel Wares, Ltd., Toronto, Canada.)

The standard Owens-Illinois Glass Wool Air Filter is low in cost, light in weight and easily replaced.

OWENS-ILLINOIS

DUSTOP AIR FILTERS



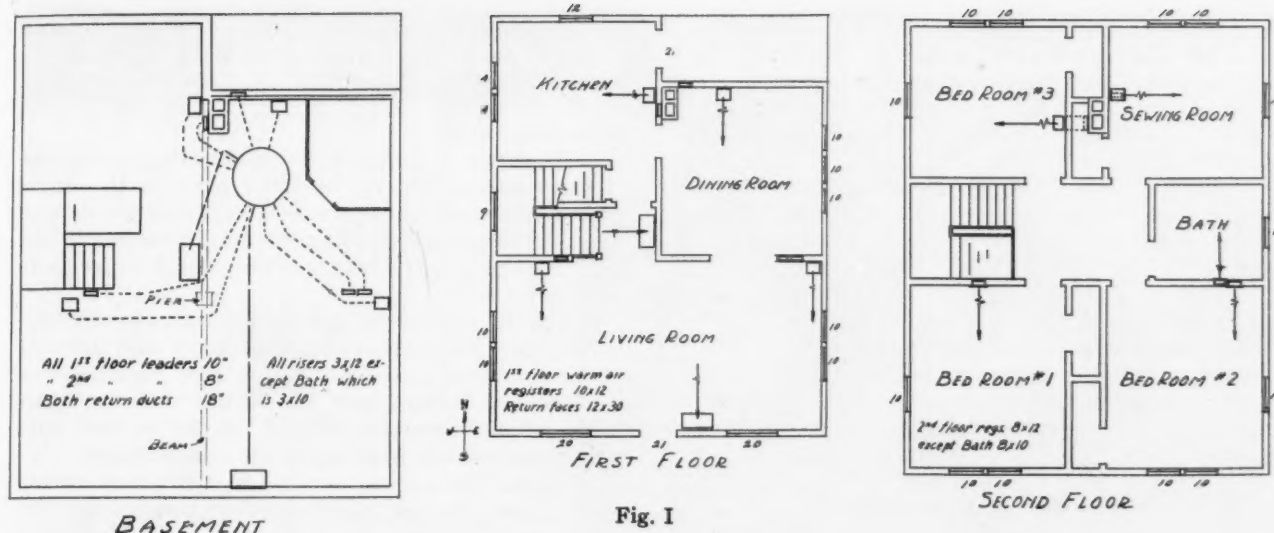


Fig. 1

We are going to remodel the heating system in the house shown above. The owner wants plenty of heat, uniform temperatures in all rooms, and the price must be low. What would you do first? Of course, you will find the faults of the old system and determine how you are going to remedy them. Your next step will consist of—

Selecting Register Air Temperatures and Velocities For Remodeling

THE warm air heating contractor who starts remodeling an existing furnace installation with the idea of including in the new system fans, filters, controls, humidifiers and other present day equipment should always bear in mind that the mere application of a fan does not mean a satisfactory forced air system, that controls have to be selected carefully and correctly applied, that filters may mean trouble unless he knows what he is doing, that humidity is a subject packed with dynamite, and that a good remodeling job calls for far more ingenuity and experience than the usual new installation.

Engineer Your Job

If the contractor starts with this feeling he is likely to give proper thought to every detail and will, in the end, provide the owner with the satisfaction he anticipates. If, on the other hand, the contractor is slip shod he is apt to overlook critical details and his final installation will be a source of constant trouble.

This means, then, that remodeling jobs should be designed from the very beginning, just as though a system for an entirely new installation was being developed.

On new systems we always begin with a data sheet on which we fill in our calculations step by step until at the end of the sheet we have before us the complete history and plan for the installation.

If we are wise and really want to do satisfactory work we will follow exactly this same plan in our remodeling jobs.

The first thing we usually determine on new

work after we have taken off the cubages and established our room and total heat loss is to select the register air temperature we wish to work with and from the register air temperature establish the c. f. m.'s and velocities throughout the system.

This same procedure is advisable in remodeling. Mechanical warm air systems **can** be designed for register temperatures anywhere between 100 degrees and 175 degrees and for air velocities in the supply ducts ranging from 150 feet per minute up to 1,000 f. p. m.

The engineer with ample forced air experience will sometimes plan a job for extremely high or low register air temperatures or for equally extreme velocities—but the heating contractor with a more limited mechanical heating experience had better avoid extremes and in the absence of definite recommendations be guided by several examples given in the Mechanical Heating Code issued by the National Warm Air Heating and Air Conditioning Association.

Temperatures and Velocities

One of these recommendations suggests a register temperature of 135 degrees and a duct velocity of 500 f. p. m.; another gives 125 degrees at the register with 400 f. p. m. velocity in the duct.

But these are by no means the limiting temperatures or limiting velocities.

There are no definite rules and there is no close agreement among experienced fan heating men as to any one combination of temperature and velocity best suited to average conditions. But the majority of those who have been actively engaged

in designing, installing and testing fan systems for a number of years, would probably advise the furnace man of limited fan heating experience to design his plants for duct velocities between 400 and 500 f. p. m. and register temperatures between 125 and 145 degrees.

But this still leaves a confusing number of combinations of temperature and velocity. Three velocities, 400, 450 and 500 f. p. m. and five temperatures, 125, 130, 135, 140 and 145 degrees, permit fifteen different combinations. To jump about in a haphazard manner, laying out one plant for a register temperature of 130 degrees and a duct velocity of 500 f. p. m.; the next for 140 degrees and 400 f. p. m.; another for 125 degrees and 450 f. p. m., and so on, can and frequently does lead to troublesome performance.

Advantage of Standardizing

We've all learned in gravity heating that when we settle on some one basis for figuring our jobs, we soon become so familiar with it that it's easy to detect errors in our figures—we may show that a certain room requires a 10-inch warm air pipe; yet our experience will immediately say, "That's not right; that room takes a 12-inch pipe."

In all calculations for mechanical heating and air conditioning systems with which we may be even less familiar, it is doubly important that we guard against expensive mistakes by holding as nearly as possible to some reasonable standard, but keeping in mind always that that standard is set up for our convenience and that **whenever there are definite reasons for doing so**, we should not hesitate to deviate from it.

It will not be the purpose of these articles to recommend any one standard. That is best settled by the individual heating man guided, wherever possible, by the recommendations of the manufacturers

whose equipment he uses. It necessarily varies in different sections of the country; it varies according to the fuel to be burned; it may vary according to the particular design of the furnace and blower equipment used.

However, a temperature of 135 degrees at the register and a velocity of 450 f. p. m. in the ducts seems at present to represent a very fair average of what is considered good engineering practice in the design of new installations where the furnace is to burn solid fuel.

But if a heating contractor has chosen this particular combination of temperature and velocity as his standard basis of figuring **new** installations, it does not follow that he should use the same basis when converting an old gravity system into either mechanical heating or air conditioning.

As an illustration, assume that we have standardized on this suggested combination of 135 degrees and 450 f. p. m. and that we are called upon to convert the gravity system shown in Figure 1, into a mechanical heating system.

Use a Data Sheet

The first logical step in figuring this or any other job of course, is to determine the heat requirements of the rooms. These heat losses may be figured by the "direct B. t. u. method" or we may apply the method outlined in the Mechanical Heating Code which is basically the same as the familiar Standard (Gravity) Code method.

(While the Mechanical Code enables one to design a mechanical forced air system for the average residence without figuring in B. t. u.'s., every heating man will find it much to his advantage to gradually become accustomed to calculating and thinking of heat quantities in terms of British thermal units.)

(Continued on page 37)

TABLE No. 1

Room	I Room Basic Factor	II Heat Loss B.T.U. per Hour	III Gravity Leader Area Required	IV Original Leader Size	V Original Leader Area	VI Original Riser Area	VII Duct Area Required for 135° & 450 F.P.M. System
Living	22.21	22,210	200	2-10"	156	—	107
Dining	9.69	9,690	87	1-10"	78	—	47
Kitchen	11.85	11,850	107	1-10"	78	—	57
Bed Rm #1	8.24	8,240	50	1-8"	50	36	40
" " #2	8.24	8,240	50	1-8"	50	36	40
" " #3	8.66	8,660	52	1-8"	50	36	42
Sewing	9.78	9,780	59	1-8"	50	36	47
Bath	3.96	3,960	24	1-8"	50	30	19
Totals	82.63	82,630	629		562		

Above is a simple data sheet on which you can show the important details of the old plant. When filled in you will have a picture of why some rooms are too hot, some too cold and what you will need to do to give the owner the things he has in mind.

PACKAGES OF POWER FOR AIR CONDITIONING



WHERE CONSTANT SPEED IS REQUIRED . . . on humidifiers, atomizers, and other domestic air conditioning applications that require a single-phase vertical motor, General Electric recommends a Type KH resistance, split-phase motor of special construction (No. 1 at right).

This motor is further evidence of General Electric's ability to meet the requirements of the domestic air conditioning industry, with either standard or highly special motors in sizes from 1/750 to 3/4 hp., in all commercial voltages and frequencies.

Our fractional-horsepower motor specialists, located in principal cities, will be glad to work with you in selecting the **RIGHT MOTOR** for the job. They will also tell you about the complete line of G-E electric equipment—control, transformers, wire and cable, etc.

1. CONSTANT-SPEED, RESISTANCE SPLIT-PHASE (SPECIAL)
2. PERMANENT SPLIT-CAPACITOR
3. CONSTANT-SPEED, POLYPHASE
4. SAME AS 1. EXCEPT STANDARD
5. ADJUSTABLE, VARYING-SPEED CAPACITOR (STANDARD)
6. HIGH-TORQUE CAPACITOR
7. SAME AS 5. EXCEPT SPECIAL



Check those fractional-horsepower motor applications concerning which you would like further information, and return this coupon to the nearest G-E office, or to General Electric, Dept. 6B-201 Schenectady, N. Y.

Air Filters
 Air Washers
 Atomizers
 Automobile Heaters
 Barn Ventilators
 Bathroom Heaters
 Blowers (all types)
 Booster Fans
 Bus Heaters

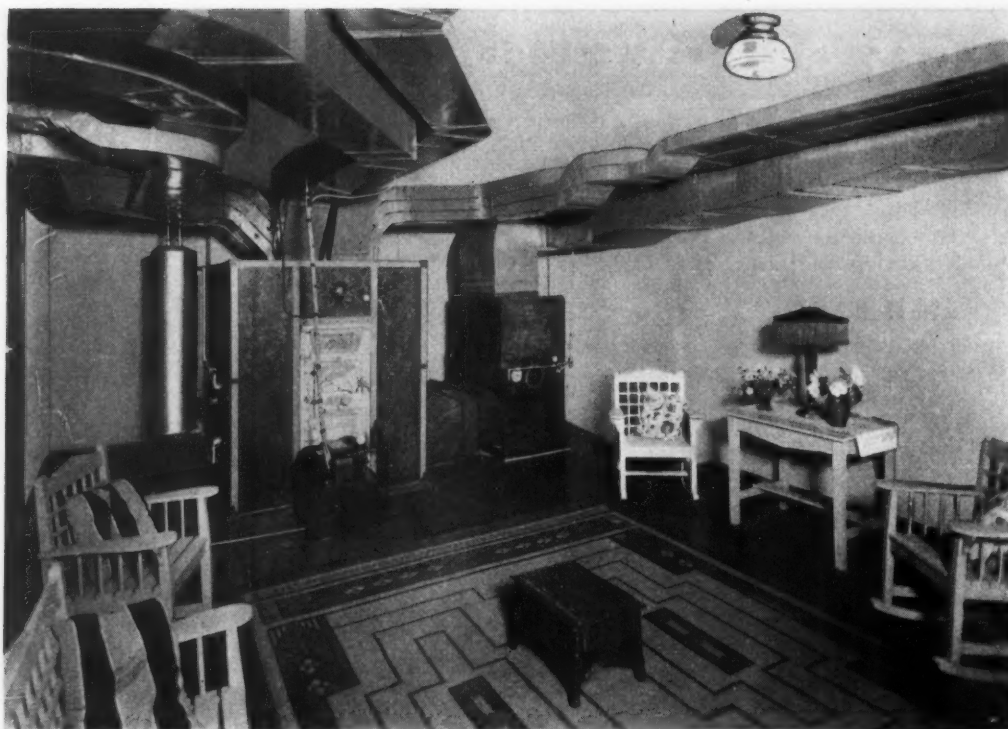
Cabinet-type Units for heating, cooling, humidifying, dehumidifying, washing, and filtering air
 Domestic Air Conditioners
 Exhaust Fans
 Fans
 Forced Draft Units
 Furnace Fans

Garage Heaters
 Humidifiers
 Incubator Fans
 Industrial Air Conditioners
 Kitchen Ventilators
 Paint Spray Booth Fans
 Propeller Fans (all types)
 Railway Car Air Conditioners
 Railway Car Precooling Units

Refrigerator Fans
 Room Coolers
 Rotary Roof Ventilators
 Schoolroom Heaters
 Special Devices
 Unit Coolers
 Unit Heaters
 Unit Ventilators
 Window Ventilators

210-217

GENERAL ELECTRIC



Remodeling An 18-Year Old "Hot Air" System

IN 1913 a Marshalltown, Iowa, home owner built a new house and installed for his heating supply a combination warm air and hot water radiator system with both warm air and radiators in all the major rooms.

The furnace was used to supply both warm air and hot water by gravity flow for the air and piped water from a coil in the furnace. This heating plant, with minor repairs, served progressive owners of the house until 1931-1932 when a new forced warm air plant providing a considerable degree of air conditioning was installed.

The problems presented in the revamping of the old system, plus the troubles which led the owners to change and, lastly, the improvements in operation and satisfaction obtained are typical of the vast market which presents itself to the contractor able and willing to look at replacement and remodeling as an interesting and profitable field of operation.

The original system was a gravity plant installed in the mode of 1913—centrally located furnace; all large round pipe leaders, none under 10-inch; individual returns, all from the first floor, except the upstairs hall; furnace and pipes taking up most of the basement; several floor registers; about 16 per cent less return air than supply; and only partial use of storm sash.

In considering a new system the owner, Mr. Hynds, specified that several changes must be made. First of all, he wanted all the old radiators removed and heat by hot water eliminated. Second, he wanted the large sleeping porch on the second floor heated to the same temperature as the rest of

the house. Third, he wanted some form of automatic heat, preferably oil. Fourth, he wanted the new system so arranged that a recreation room could be made out of one portion of the basement. And last, he wanted attention free, uniform, comfortable temperatures throughout the house.

These specifications, in view of conditions, made the remodeling an interesting problem, particularly the heating of the sleeping porch, remodeling of the basement and automatically comfortable heat.

The solution of the problems and the providing of the conditions specified were entrusted to



This is the Hynds house and above is a view of the basement after the remodeling was completed.

The data sheet for the remodeling was filled in just as completely as for a new installation. Note the attention paid to such items as single or double sash, ceiling and floor losses, available stack and register sizes, etc. Such attention to detail is a safeguard against future trouble.

ROOMS	ROOM DIMENSIONS	CUBICAL CONTENTS	REPORTED				GLASS AREA (Sq. Ft.)	WALL AREA (Sq. Ft.)	CEILING AREA (Sq. Ft.)	FLOOR AREA (Sq. Ft.)	CU. CON. LOSS (GAL.)	TOTAL	LEADER SIZE (Sq. Ft.)	PIPE SIZE (Sq. Ft.)	AREA USED (Sq. Ft.)	
			Glass	Wall	Ceiling	Floor										
Living	20' x 17' x 9'	4060	115-D	275	---	---	4.8	5.3	---	---	8.8	14.7	56	1-12" (Ceiling Only)	84	
Dining	15' x 16' x 9'	1870	45-S	190	---	---	1.1	2.3	---	---	2.4	9.6	42	1-12" (Ceiling Only)	42	
Brkfst.	9' x 13' x 9'	1050	35-S	48	---	---	2.8	0.6	---	---	1.0	4.4	20	1-12" (Ceiling Only)	42	
Kitchen	10' x 13' x 9'	1170	24-S	66	---	---	2.0	0.8	---	---	1.5	4.3	20	1-10" (Ceiling Only)	35	
Hall (1st Fl.)	15' x 13' x 9'	1580	30-S	156	---	---	2.5	1.9	---	---	4.0	9.7	44	1-12" (Ceiling Only)	42	
Hall (2nd Fl.)	11' x 13' x 8'	1140	---	---	---	---	---	---	---	---	---	---	---	---	---	
Den	13' x 15' x 8'	1610	42-S	105	---	---	3.5	1.3	2.3	---	2.0	9.1	41	1-12" (Ceiling Only)	42	
Bed No. 1	13' x 15' x 8'	1610	30-D	142	---	---	1.3	1.7	2.2	.3	2.0	7.5	34	1-12" (Ceiling Only)	42	
Bed No. 2	13' x 13' x 8'	1400	44-D	180	---	---	1.8	2.2	1.9	.8	2.0	8.2	37	1-12" (Ceiling Only)	42	
Bed No. 3	13' x 13' x 8'	1400	14-D	177	---	---	0.6	2.1	2.0	---	1.8	8.6	39	1-12" (Ceiling Only)	42	
Bath	6' x 10' x 8'	520	39-D	45	---	---	0.8	0.5	0.7	---	0.7	2.7	12	10" (Ceiling Only)	120	
Slp. Porch	11' x 23' x 8'	2120	119-S	212	---	---	9.8	2.5	2.6	2.6	9.3	24.4	110	1-12" (Ceiling Only)	120	
Saving	7' x 8' x 8'	448	16-D	40	---	---	0.7	0.5	0.6	---	0.8	2.6	12	10" (Ceiling Only)	120	
Lvry & Dry	12' x 20' x 8'	3080	30-S	57	---	---	2.5	0.7	---	---	2.0	5.2	24	1-10" (Ceiling Only)	35	
* Storm Windows are Used Divide by (34)																
* Floor and Ceiling Insulated Factor (104)																
Total Contents			23998				TOTAL				114.1		516		610	
Total (A) X 1000 = B.T.U. (Without Exposure)			114,100													
Add (15%) Exposure =			131,215				B.T.U. Required of Furnace									
With Gas Furnaces add 25% to B.T.U. to get Furnace Size.																
C.F.M. at 135° Register Temp. = B.T.U. X .0131																
C.F.M. = 0.0122 x 131,215 = 1600			at 140° Reg Temp.													
Blower No. 13-A Am-Pe-Co Washer Blower																
Air Change = Contents =							Minutes									
C.F.M.																

COLD AIR LOSS		COLD AIR LOSS		COLD AIR LOSS		SUMMARY	
Room	Area	Room	Area	Room	Area	Actual Requirement (Pipe Area) (B.T.U.)	131,215
Bed Fl.	1-5 x 14	9	342	Living	2-5 x 30	336	
Hall 1st Fl.	2-8 x 30	342		Breakfast	1-5 x 30	114	
				Bed No. 1	1-5 x 14	50	
				Bed No. 2	1-5 x 14	50	
						800	
						784	

Furnace No. 55-52 H.C. Co.	150,000
Warm Air Pipe Used	610
Cold Air Pipe Used	800

the local department of the Lenox Furnace Company.

Because of the arrangement and condition of the old plant, careful engineering plans were made out so that no slip up might occur. The house was charted room by room on a data sheet with room dimensions, cubical contents, glass, wall, ceiling, and floor areas entered. Particular attention was paid the glass areas as shown, so that windows which did not have storm sash might be taken into account.

The areas were then projected to arrive at the area of leader pipe and stacking required and these figures entered. It should be noted that on this installation, like on most remodeling work, the existing stacks to second floor rooms were not sized for exact heat delivery, but in this house were not badly out of line with requirements. The difference was compensated for in damper settings.

The return air system left much to be desired, but Mr. Hynds did not want any more cutting to

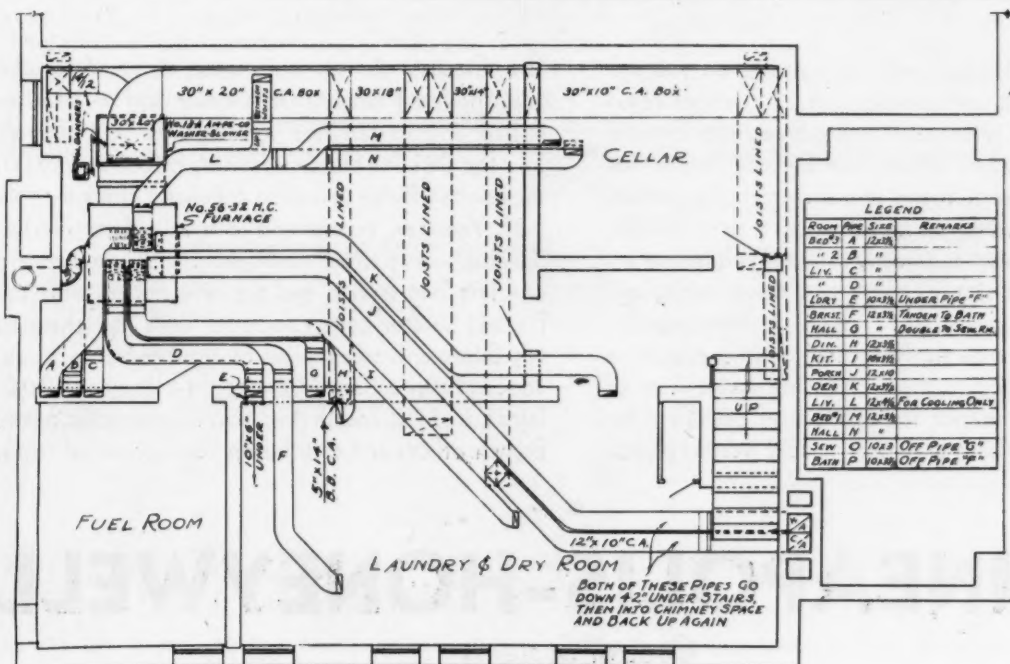
be made than absolutely necessary so the return air system was arranged to take all of the air from the first floor with one return from the second floor as shown on the plans. Despite some anxiety, the return system has worked satisfactorily and has not set up any floor drafts.

Of all the problems solved in the installation, the heating results in the sleeping porch proved of most satisfaction. This sleeping porch with its large floor area, practically all glass walls, cold floor and ceiling accounted for about 21 per cent of the total heat loss of the house. Furthermore, it had to be heated with one supply and one return, both making the longest runs off the furnace and blower. Also, in order to get the supply and return to the porch it was necessary to drop the pipes 3½ feet under the basement stairs then take them upstairs through a chimney space as shown and across the sleeping porch floor to the registers.

The ash dump space in the chimney measured 14 by 24 inches. Warm air was taken up through

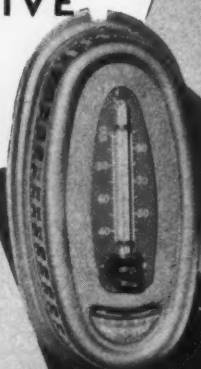
this space in a 10 by 12-inch duct. This duct was wrapped with one-inch Rock-wool blanket before installation. Cold air was returned through the remainder of the space in this chimney.

The new furnace is placed in one corner, all leaders are wall stacking nested against the ceiling, runs have been bunched and the return system carried along outside walls. A working table of pipe sizes is used as shown.



Quality

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the **ELECTRIC JANITOR**

The Electric Janitor,
 thermostat and damper
 motor. In circle . . .
 The 8-day Jewelled
 balance clock thermo-
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 DeLuxe Electric Janitor

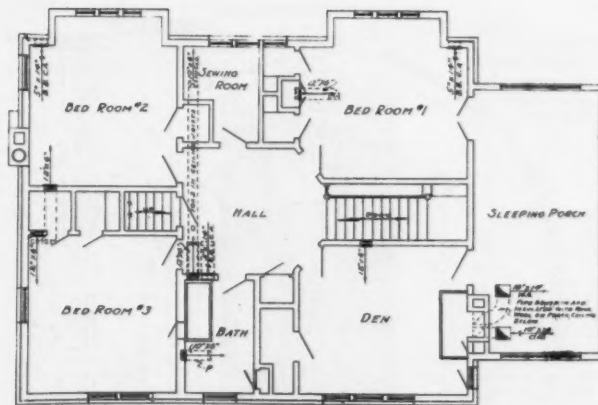
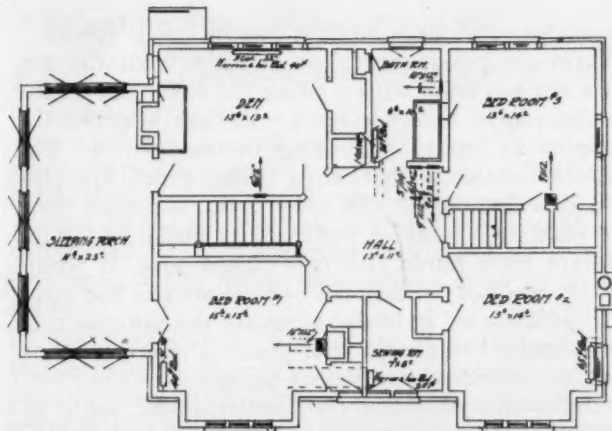


YOUR customers will thank you when you sell them an Electric Janitor, a quality damper regulator yet selling at a competitive price. Entirely electric and motor driven, the Electric Janitor has features ordinarily found only in much higher priced damper regulators, yet its list price is only \$28.00, packed complete and ready to install, all fittings included. It is simple, sturdy and dependable, and requires no lubrication . . . Built to Minneapolis-Honeywell standards throughout, this inexpensive but accurate regulator will provide many years of comfort, convenience and economical operation for owners of manually fired coal or coke heating plants.

The Electric Janitor operates direct from the house lighting circuit. It is easily and quickly installed and is designed for use with limit controls . . . The De Luxe Electric Janitor, priced at \$49.00, includes an 8-day jewelled balanced clock thermostat. You can recommend and sell these Electric Janitors with perfect confidence. Quality controls cost less than service and the few dollars more the Electric Janitor costs compared with the cheapest regulators will mean years of trouble-free performance and satisfaction. Minneapolis-Honeywell Regulator Co., 2726 Fourth Ave. So., Minneapolis, Minn. Branch offices and distributors in all principal cities.

MINNEAPOLIS-HONEYWELL

Control Systems



At the left is the old second floor system and at the right is the remodeled system. Compare their points of difference.

Despite these problems the porch has been kept at a temperature not more than one or two degrees lower than the living room on most days and never more than five degrees lower than the house on days with a high east wind when exposure is most severe. The porch, also, was heated throughout the winter all during the daytime only shutting the register off at night.

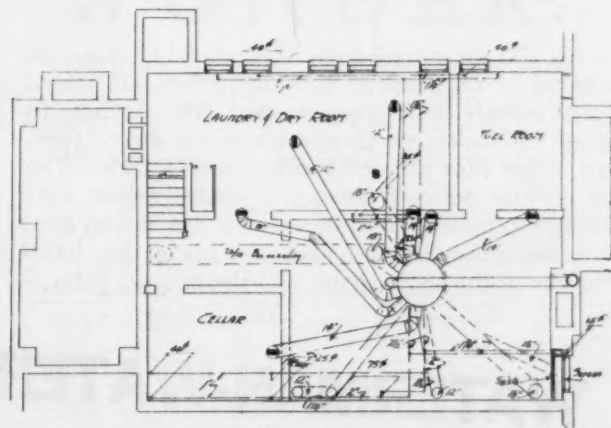
The plan shows three warm air openings in the living room. The one on the north wall was added for the purpose of summer cooling only. It is entirely turned off during the heating season. Mr. Hynds reports that cooling results with the blower washer were quite satisfactory.

The cold air return ducts were dampered to prevent re-circulation, basement windows were opened and the outside air was pulled through the basement and into the washer blower, then blown on through the house and out one open window on each floor. Some of the bedroom warm air pipes and the large duct to the sleeping porch were closed during the summer so that all of the capacity of the blower was directed to the living quarters downstairs.

The fan is controlled by a bonnet thermostat which is located in the stack. This location was chosen to see if blower operation in closer accordance with oil burner operation could be obtained. The control is so set that the blower starts approximately four minutes after the oil burner starts. On usual cycles the blower continues to operate for 15 to 20 minutes after the burner goes off. In mild weather an overrun of room temperature of no more

than 1° was found. In cold weather there is absolutely no overrun of temperature.

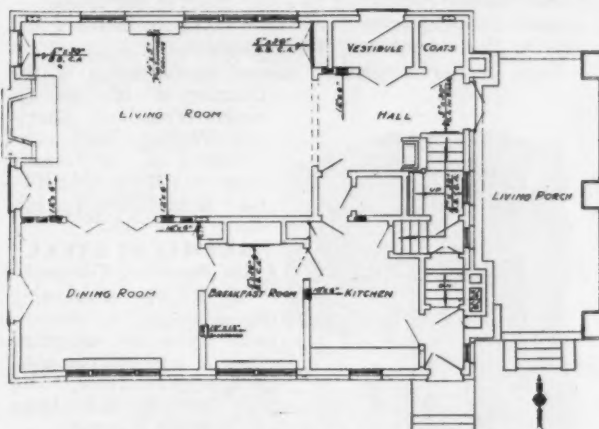
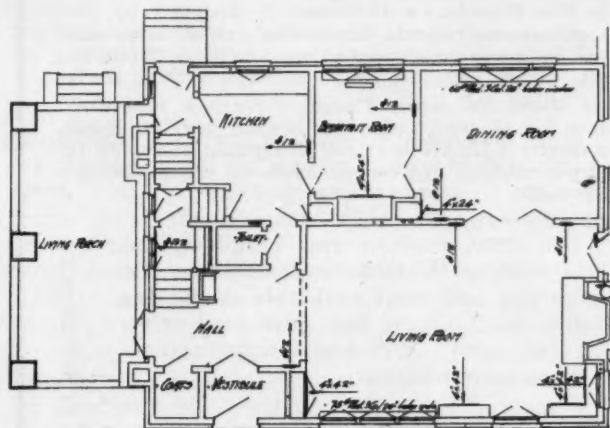
The oil burner has been set for a combustion rate which demands continuous burner operation during the most severe weather in Marshalltown.



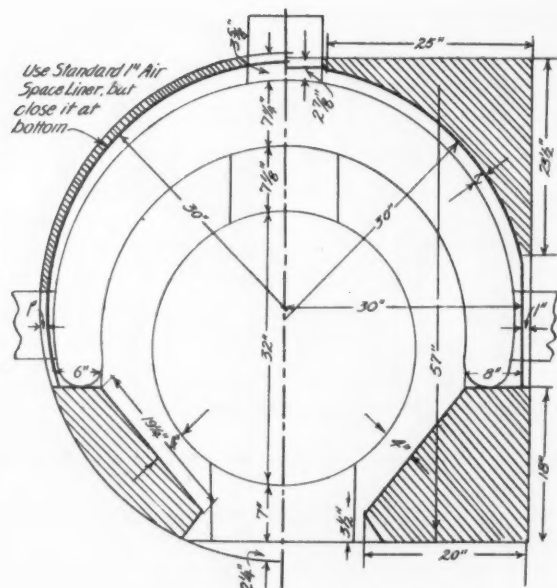
The old furnace system looked like this. It left little usable basement space and was dirty and inefficient.

By setting the burner combustion rate down to the needs of the house in this way overrun of room temperature was nicely eliminated while getting practically continuous blower operation.

What was done below ground is best indicated by the photograph of the new furnace and the remodeled basement. The new Lennox furnace, square cased, the combination blower and washer,



At the left is the old first floor system and at the right is the remodeled system. Compare their points of difference.



The new furnace was baffled as shown on the right half. Circular casings are baffled as shown at the left.

the Air-Flo piping whereby wall stacking is nested for most of the leaders, the oil burner—all placed in an outside corner—permitted Mr. Hynds to change his basement from a cluttered, dusty, pipe-filled space into a comfortable liveable area. The new ceiling, painted floors and walls, sturdy furnishings plus the cleanliness of automatic heat have, according to Mr. Hynds—"made this basement one of the show rooms and the general gather-

ing place for the entire family and friends." Warm air pipes are taken directly from the top of a flat top hood with a collar the same size as the leader pipe. In other words no flare is given the pipe to an enlarged opening in the bonnet. The reason for this is that when taking pipes from the top of a flat top hood it is essential to bunch them as near the center of the hood as possible. If the collars were flared out to a larger size, it would make necessary using more of the area of the hood.

Joints used in leader pipes are the same as used for standard single tin riser pipe. These were thoroughly sealed with asbestos paper.

Upstairs all radiators were removed, some additional warm air registers and returns were installed, registers were taken out of the floors and placed in the baseboard, better distribution of heat and return air was obtained, better balance in supply was obtained by changing sizes of registers, appearance was enhanced by substituting modern faces for the old ones.

Equally interesting, too, is Mr. Hynds' report that for the first full heating season his fuel cost was \$150 using oil at six cents per gallon.

So far as the specifications established by the owner are concerned, the radiators have been removed; all heating is by cleaned, humidified, circulated warm air; the sleeping porch is adequately heated; the furnace-fan-oil burner system requires no attention except to fill the oil tank; the basement has become one of the choice spaces in the house; and temperatures are automatically maintained within a narrow range throughout the rooms.

WATERMAN-WATERBURY ANNOUNCES

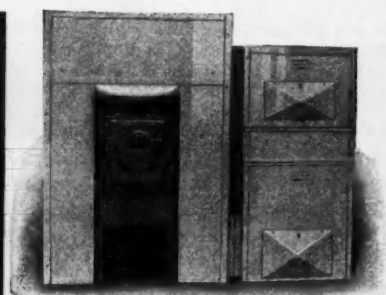
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Selecting Temperatures and Velocities

(Continued from page 30)

(We are taking for granted in this series that the contractor has received and studied the Mechanical Code and that he is familiar with the terms and methods established in it. It should not be necessary, then, to explain all the terms which are used in the following discussions. If any contractor does not have a copy and wants one to follow these articles, write us.—The Editors.)

In Table No. 1, Column I gives the room basic factor (r. b. f.) of each room shown in the accompanying plan. Column II gives the heat loss of the room in B. t. u. per hour and it will be noted that in each case, this is 1,000 times the r. b. f. in Column I. Column III gives the gravity leader area required for each room if the plant were installed according to the Standard (Gravity) Code. This leader area for first floor rooms is equal to the r. b. f. of Column I multiplied by 9; for second floor rooms, the r. b. f. multiplied by 6.

TABLE NO. 2

*B.T.U. Capacity of Warm Air Supply Ducts
per Sq. Inch of Cross-Sectional Area.*

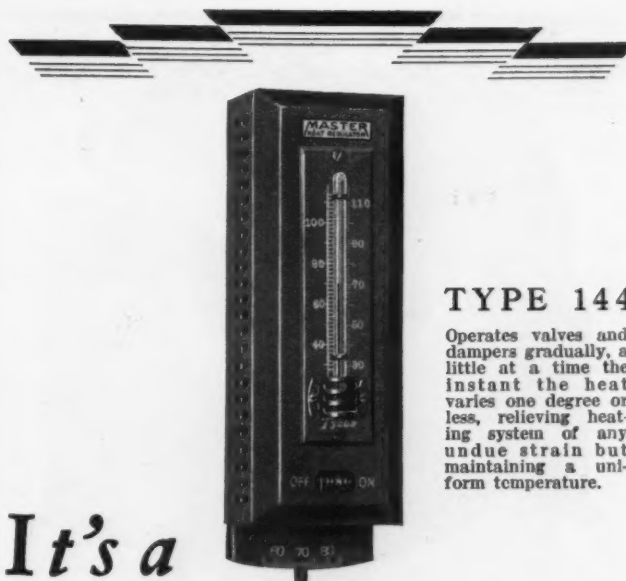
FPM	Register Temperature					
	125	130	135	140	145	150
400	159	171	182	194	205	216
425	169	182	194	206	218	230
450	179	192	203	218	230	243
475	189	203	217	230	243	256
500	199	214	228	242	256	270
525	209	224	239	255	269	283
550	219	235	251	267	282	297
575	228	246	262	278	295	318
600	238	256	274	291	308	324
625	248	267	285	303	321	337
650	258	278	297	316	334	351
675	268	288	308	327	346	364
700	278	299	319	339	358	378

The table above is arranged to give you in condensed form the combinations of register temperature and velocities which produce equivalent heat delivering ability.

Columns IV and V give the sizes and areas of the present warm air leaders from which it will be noted that the existing gravity system does not come up to the Standard Code requirements for gravity heating.

Column VI gives the cross sectional areas of existing wall stacks to second floor rooms. Column VII gives the duct area that would be required according to the Mechanical Code if a forced air system were designed for a register temperature of 135 degrees and a duct velocity of 450 f. p. m.

A comparison of the required supply duct areas in Column VII with existing leader areas in Column



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This remarkably efficient temperature control is equipped with a powerful, but quiet motor and a non-inductive starting switch. Contact points are of platinum iridium; the thermostatic elements are extremely sensitive. Current required is negligible. Installation is very simple.

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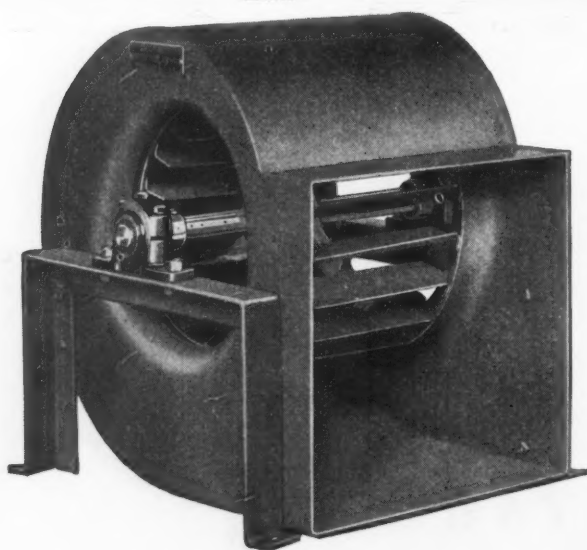
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V, shows that all of the old leaders are of ample size for the proposed mechanical system.

Stacks Are the Key Problem

But a comparison of the required areas with the present wall stack areas in Column VI shows that the bath is the only room with a riser equal in capacity (cross sectional area) to the supply duct requirements of the second floor rooms. The most extreme case is the Sewing Room where the required area of 47 square inches is 30% greater than the actual area available in the 3 by 12-inch riser.

This condition is very often met in converting old gravity plants into modern mechanical systems and can easily lead the heating contractor to conclude that he must install an additional wall stack to assure adequate heat for the room after the plant is changed over from natural gravity flow to mechanical circulation.

Also, this common condition often becomes a serious stumbling block for the heating contractor who prides himself on first class installations. There are also cases where a certain second floor room heated satisfactorily by gravity, but when the heating contractor figures the pipe sizes required for mechanical heating, he finds that according to his figures the existing wall stack is too small.

A Contractor's Problem

One correspondent writes concerning such a job: "This would require additional wall stacks which the owner will not consider and I don't blame him because his upstairs rooms heated all right by gravity and I can't see any sense in changing over to a forced air system if it is so much less efficient than gravity circulation that more pipes and registers have to be installed."

What's the answer?

One of two things is manifestly true; either (1) the original risers were not really large enough to properly warm the second floor rooms by gravity circulation according to the Standard Code assumption of a register air temperature of 175 degrees in zero weather, or (2) the supply pipe sizes for a mechanical system have been calculated on the basis of **too low** a register temperature or **too low** an air velocity or **both**.

When we convert an old gravity plant into a modern mechanical system we're up against the same proposition—intensified. The owner will tell us that the old plant heated the house satisfactorily, but he wants a mechanical system so he can "filter the air" or so he can "get quick heat when he wants it" or he may give any one of a dozen reasons. But usually, in the back of his mind, is a conviction that a mechanical system will yield more heat than he ever got with gravity circulation.

All of us recognize the advantages of reasonably low register temperatures; that was one of the big arguments in favor of Standard Code installations in gravity heating because it limited register temperatures to 175 degrees and provided warm air instead of hot air heating. Granting that heating results are improved by pulling the old hot air register temperatures of 200 degrees or more down to the warm air basis of 175 in gravity heating, and that with mechanical circulation a further improvement in results can be secured by chopping

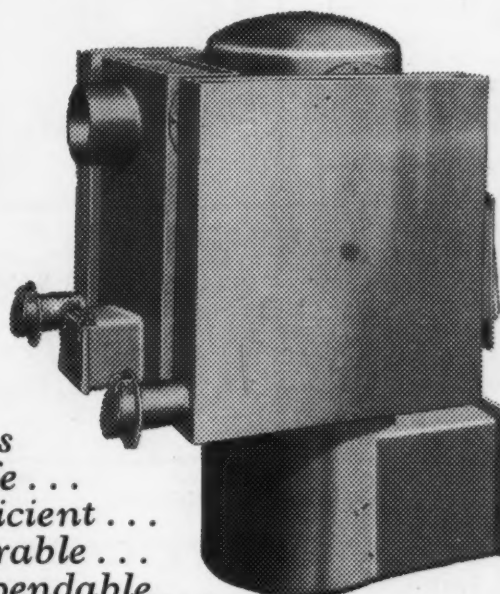


ROUND OAK

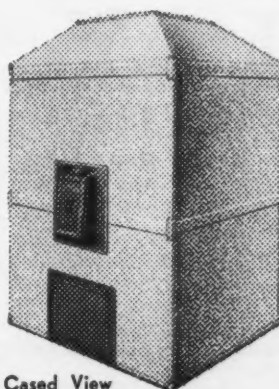


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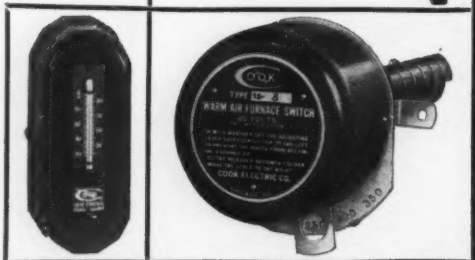
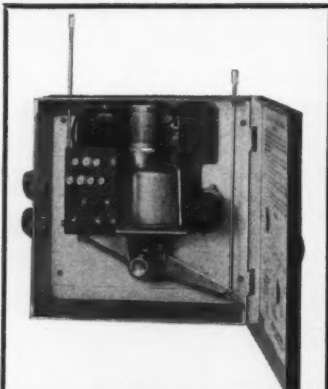
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 GUARANTEED EQUIPMENT

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off another 25 degrees and introducing the air at 150 degrees, it does not necessarily hold true that the lower the register temperature the better the heating results. In fact, some heating men have gotten into serious difficulties by installing plants that operate at too low a register temperature.

Watch Your Air Change

The lower the temperature of warm air supplied, the greater the volume of air that must be supplied to deliver a specific quantity of heat.

And the greater the volume of air circulated, the more pronounced will be the movement of air within the room. Now the normal body temperature is 98 degrees and the normal room air temperature is in the neighborhood of 70 degrees. Too rapid a movement of 70-degree air around and over the body surfaces, produces a cooling effect—quite a pronounced and annoying effect judging from complaints that furnace men get when they install a plant that circulates too much air.

In other words, trouble follows the installation of a plant which is designed to operate at too low a register temperature. Just how low we may pull the register temperature before getting into trouble, is open to question. It varies according to the type of plant, whether heat generation is continuous as with a coal fire or intermittent as with many oil and gas fired furnaces.

High Temperatures and Velocities

As to maximum temperatures we can be more definite. A great many coal fired plants have been designed for register temperatures of 150 degrees (or even a little higher) and the results have been fully satisfactory to the users. Therefore in revamping an old system, there seems to be no reasonable objection to the use of 150 degrees at the register as the design basis.

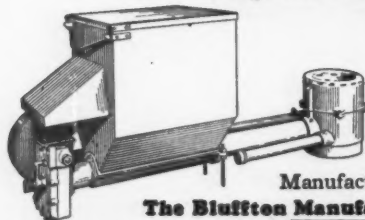
In addition to being afraid of what we've thought of as "high" register temperatures in mechanical heating, many of us have likewise been fearful of high air velocities in the ducts. We are liable to overlook the fact that air velocities ranging from 300 to 400 f.p.m. in second floor wall stacks of gravity systems are not abnormal. Many competent furnace men who have tested and analyzed the performance of gravity plants in actual operation will verify the statement that riser velocities frequently go beyond 400 f.p.m.—and not in "trouble" jobs either.

That being true, there's no reason to fear excessive frictional resistance due to velocities ranging from 25% to 50% higher in mechanical systems. Air noise, which we've also feared, will not manifest itself with duct velocities up to 750 or 800 f.p.m. Plants are operating at much higher velocities without noise and a tentative limit of 750 f.p.m. is very conservative for risers and other branches from a main trunk line so far as air noise is concerned.

The most serious problem connected with the use of relatively high velocities in supply ducts, is the difficulty of reducing that velocity abruptly at the register, and we must not forget that velocities of more than 400 f.p.m. through warm air supply registers placed below the breathing level, are liable to bring complaints. This matter will be discussed more fully in a later article.

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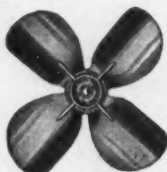
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32 years' experience building Propeller Fans—assembled, balanced and tested ready to mount on motor shaft.

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Junior Air

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Everybody who knows anything at all about air conditioning wants it. And most everybody knows about it.

There are hundreds of home owners right around you who wish they could have air conditioning. Few can just now afford the elaborate high priced systems. But the Miles Junior Air Conditioner is easily within the means of practically all.

The Miles will give them the major benefits of air conditioning. It will cure cold floors, hot ceilings, "hard-to-heat" rooms, stuffy air, and dusty air.

It is the device that will make many a faulty furnace installation perform up to top efficiency; and even produce results the best of gravity jobs can not deliver.

The feature of air conditioning which presents the biggest appeal to the housewife is clean air. The Miles Junior has cleaning ability plus. Nothing better anywhere at any price. Filters 98% efficient.

Included is a feature no other air conditioner can have—The Miles Patented By-Pass Louvre. This provides a way for the air to pass around fan and filter so that free air circulation through the furnace casing is assured when the fan is not in operation. It is the only guarantee against furnace "breathing."

There is no reason why this new unit can not easily be developed into a major feature of your business. Every furnace heated home is a prospect. There is no closed season. January and February should produce as well as November and December.

REMEMBER: You can install a Miles Junior Air Conditioner for less than \$100.00 and make a good profit.

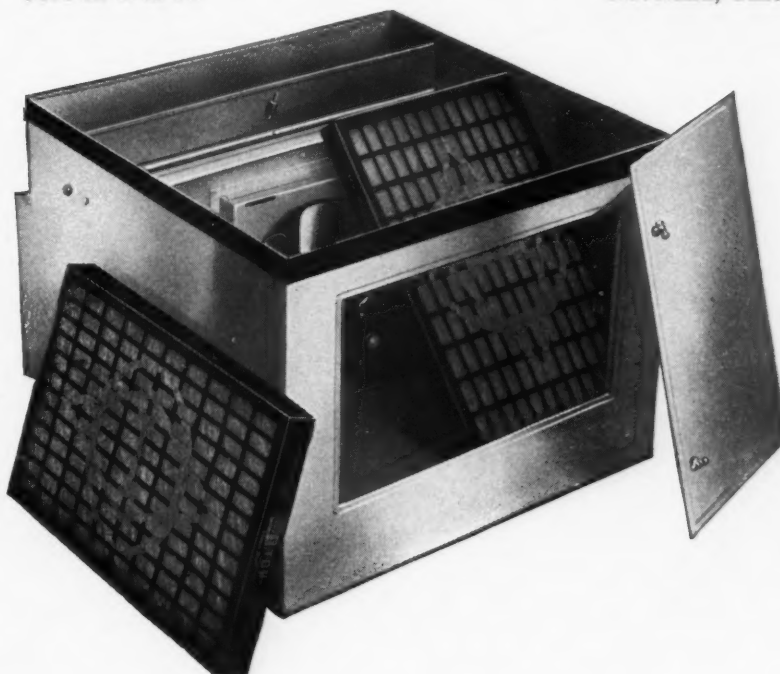
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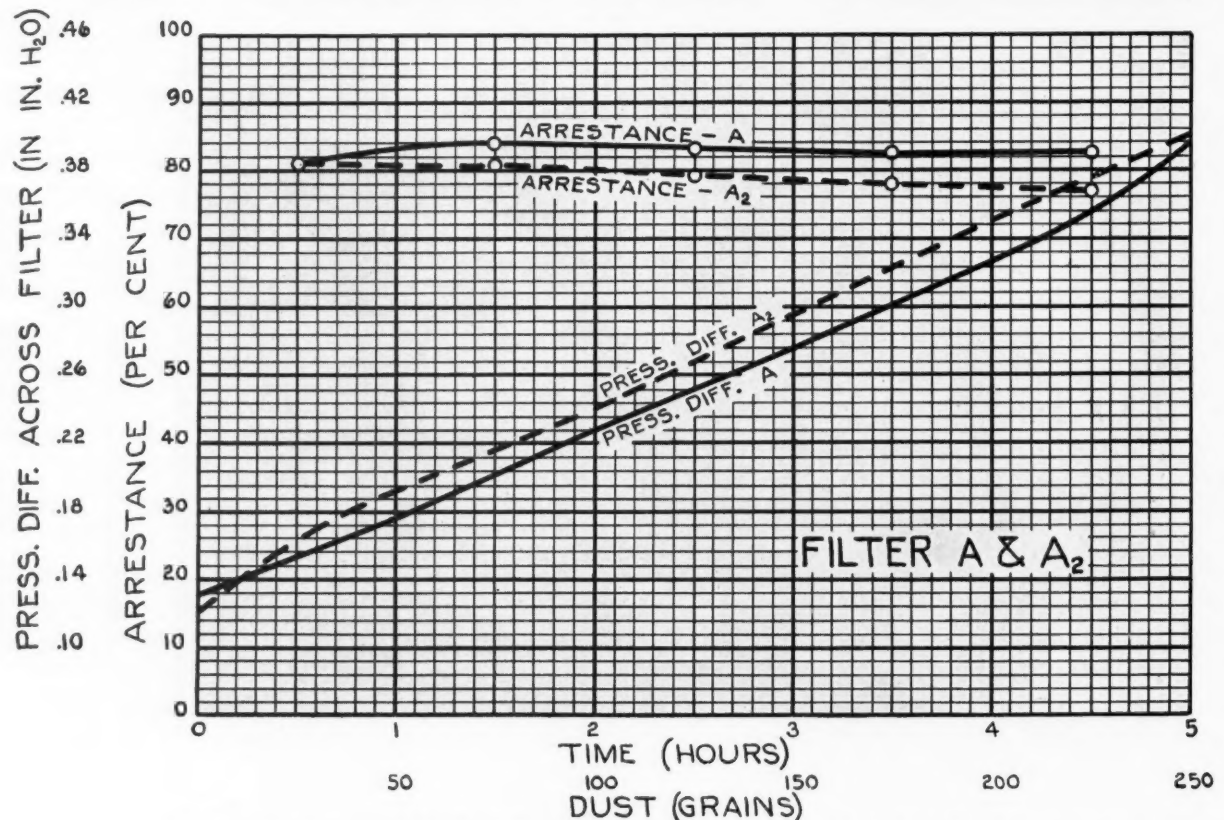


No. 22: For 18", 20" and 22" furnaces. Complete with Miles patented by-pass louvre, 2 filters, fan and filter- and fan-
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A recent test was made by Prof. Frank B. Rowley of the University of Minnesota, under the auspices of the National Warm Air Heating and Air Conditioning Association, in accordance with the Code for Testing Air Filters of the American Society of Heating and Ventilating Engineers.

This test proves conclusively the high cleaning efficiency, low operating resistance and large dust holding capacity of the THROWAY FILTER.

The results showed:

1. The cleaning efficiency is practically uniform, being above 80% throughout the test.

form, being above 80% throughout the test.

2. The rise in resistance was gradual and uniform.

3. The filter contained 207½ grams of dust before the resistance reached the maximum capacity of the fan.

The dust used in this test was composed of 50% lampblack and 50% pocahontas coal ash, sifted through a 200 mesh screen, which is recognized as a much more difficult dust to handle than that found in an average home.

Write for "Profits from Clean Air".

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Seaming a Can

American Artisan:

Will you please tell us which way is the easiest method to make a seam on a straight side of a can when you can't get in after the bottom is double seamed. Also, will the solder soak in on one better than on the other.

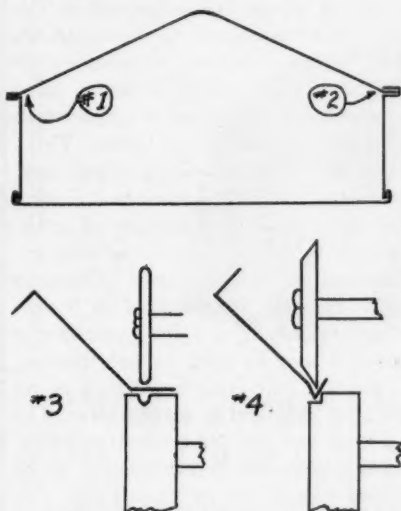
H. F., Ohio.

Reply by

J. H. Brandt, Instructor Mooseheart

I have marked the two joints shown on the original sketch Nos. 1 and 2. As far as the strength of the soldering is concerned either joint would be equally strong since the solder can be sweated in on one as well as the other.

Where a handle is to be attached to the cone top, and to withstand rough usage, we prefer the construction shown in No. 1, as it will not open as readily as No. 2 and gives a better finished appearance.



The No. 1 joint offers a little less difficulty in forming up and is much easier to assemble than No. 2.

To form the joint on the bottom of the can as shown in No. 2 the elbow edging roll would have to be used or a wide flange turned, then a burring machine used to turn up a part of the wide flange.

The first method while easily formed offers difficulties in assembling. The second method is difficult to form and complete without leaving a rough appearance.

To construct the No. 1 joint the cone top is formed to shape and the edge turned out flat on the turning machine as shown in sketch No. 2 on back of original sketch. The flat edge is to be turned a little more than twice the width of the flange turned on the can body.

The burring machine is then used to turn a burr to the inside of the cone on the flat edge as shown in sketch No. 4.

The two parts are then assembled using a setting down hammer where necessary to snap the body into place.

The joint can then be closed and soldered.

For ease in construction and assembly as well as final appearance we recommend the joint shown in No. 1 of the original sketch.

Church Problem

American Artisan:

We were called in to look at a furnace installed in a church in an arrangement as shown in the sketch. The building is 56 by 56 feet in area with a 25 foot ceiling. There are two large pipeless furnaces placed in the basement as shown. Each has a firepot 28 inches and an outside casing diameter of 44 inches. Each furnace delivers through one round 36-inch diameter pipe and in place of the usual cold air for a pipeless each furnace has a single return pipe and floor face placed a short distance out from the register. The return pipe is 24 inches in diameter with a 26 inch round return grille.

The system fails to heat the church satisfactorily. We think that perhaps if additional air is taken from under the balcony at the rear of the auditorium as shown in our sketch we might get better circulation under the balcony where complaints are made of cold air and no heat.

K. R., North Dakota.

Reply by The Editors

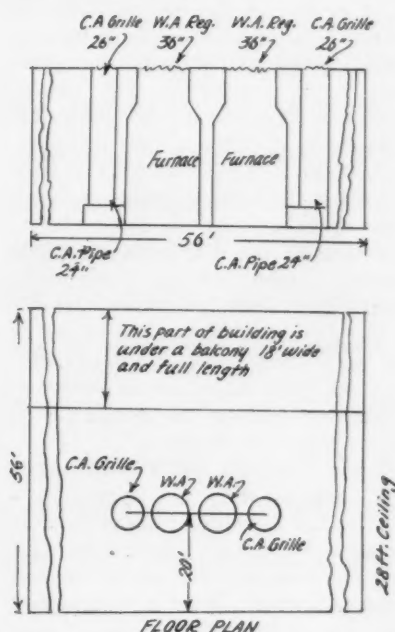
In reply to your letter of the 6th, regarding the church installation which does not operate satisfactorily, we suggest that the principal thing wrong with this system is a lack of heat input to the church.

According to our calculations, you are obtaining by gravity flow approximately 1200 C.F.M. of air per minute and to heat the church satisfactorily you should supply 2600 C.F.M. at not

less than 180 degree register temperature.

We approve the re-location or addition of two more cold air returns located under the balcony as indicated on your letter but do not believe that the additional cold air will, of itself, remedy this situation.

Your particular problem is brought about by the high ceiling in the church. Temperature readings will probably indicate excessive heat collection at the ceiling and high above the breathing line level. Unless some means, such as fan circulation, can be used to break up this stratification of hot air at the ceiling you must supply increased heat in order to insure comfortable temperatures at the breathing line.



The system now installed might be called a modified pipeless and from the dimensions given we understand that your warm air register is 36 inches in diameter. The only available data on a furnace of this size which we have indicates that the maximum capacity of one furnace is about 25,030 cubic feet. Your auditorium figures roughly 60,000 cubic feet which indicates that the two furnaces are just about the right size providing conditions inside are such that air circulation is adequate. It is probable that you have sufficient heating area but you will have to overcome the matter of stratification before the occupants will feel comfortable. Your cold air pipes, 24 inches in diameter with two to a furnace, are quite all right according to standard installations.

Basement Air Supply

American Artisan:

I am figuring a heating system for a mechanical warm air installation where all return air from the first floor is released into the basement rooms through return air grilles, no duct work being used for returning air to the fan. The building is one story above the basement. The recreation room in the basement has a high heat loss because of full exposed walls while the billiard room, also in the basement, has a low heat loss because of little exposed wall.

Air enters these basement rooms at 65 to 70 degrees but I do not see why I should use any different treatment or capacities in heating these basement rooms than if the air was returned through closed ducts.

Also, where can I find tables or formulas on heat loss from ducts?

M. J. B., Springfield, Ill.

Reply By Platte Overton

In so far as heating the basement rooms is concerned the only formula to be followed is to supply the necessary B.t.u. to heat the room plus a sufficient B.t.u. to raise the return air from 65 to 70 degrees. This will probably mean that you will have to raise your register air temperature and perhaps speed up your air change in order that the fan will be handling five degree warmer air than customarily handled.

For heat loss from ducts so far as we know there are no tables available but engineers figure about 30 to 90 B.t.u. per square foot of duct or an average of 50 to 60 B.t.u.

The 1933 edition of "Fan Engineering" specifies this loss as follows—"According to the best authorities the coefficient of heat transmission (K) for direct radiation and convection will vary from 1.75 to 2.5 B.t.u. per square foot per degree difference in temperatures between the inside and outside air. A factor K of 2.2 B.t.u. is the factor commonly used.

"Assuming a velocity of 1,500 feet per minute through the pipe we find from the diagram giving 'Rate of Heat Transmission for Longitudinal Flow of Air' on page 63 that for the internal surface of the pipe K equals 6 B.t.u. The total resistance of the duct will then be—

$$\frac{1}{K} = \frac{1}{6} + \frac{1}{2.2} = 0.621 \text{ and } K = 1.61$$

"For conditions as outlined above we may assume that the heat transfer through galvanized iron ducts per square foot per degree difference in

temperature between inside and outside equals

$$H = K (t_a - t_r) = 1.61 (t_a - t_r)$$

where K = 1.61 B.t.u.

H = heat loss per square foot per hour

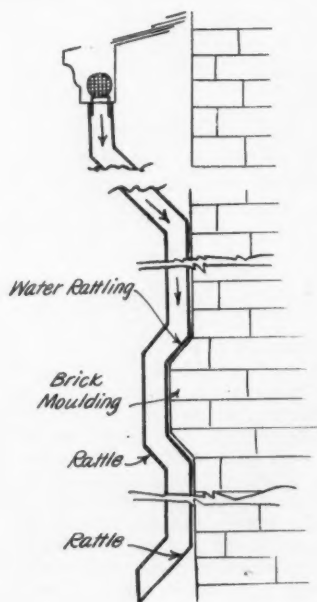
t_a = temperature of the air in the pipe

t_r = temperature of the room."

Rain Pipe Noise

American Artisan:

Please tell us if you have ever heard of a complaint on noise made by rain water dropping down a conductor pipe where the falling water strikes an angle and "rattles." On one of our jobs where the pipe is placed as shown on the drawing there is this noise and the customer is complaining. We tried



roofing cement and tar, but this did not help. If we take the angle apart and put hair cloth on the inside will this stop the noise?

C. L. M., Chico, Calif.

Reply By The Editors

We have never had a complaint of this kind sent in to us. Several local contractors canvassed over the phone also fail to give any suggestion. However, Henry L. Brown, South Shore Sheet Metal Works, Chicago, suggests that if possible take the turn apart and insert longer radius elbows in the pipe so that the water will "flow" through the turns rather than strike the pipe in changing direction.

Note—Can any reader offer suggestions on this?

Tinning Machines

American Artisan:

We have a small bread mixing machine that the customer wishes tinned on the inside. This machine is made of steel and cast iron. Please let us know the best method for tinning, also what solder and flux to use.

E. A. B., Traverse City, Mich.

Reply By The Editors

Block tin dissolved in muriatic acid with a little mercury forms a very good amalgam for cold tinning; or 1 part of tin, 2 of zinc, and 6 of mercury. Mix the tin and mercury together until they form a soft paste. Clean the metal to be tinned, taking care to free it from greasiness. Then rub it with a piece of cloth moistened with muriatic acid and immediately apply a little of the amalgam to the surface, rubbing it with the same rag. The amalgam will adhere to the surface and thoroughly tin it. Cast-iron, wrought-iron, steel and copper may be tinned in this manner. Those who find it difficult to make soft solder adhere to iron with sal amoniac, will find no difficulty if they first tin the surfaces in this manner, and then proceed as with ordinary tin plate.

Iron and steel may be tinned in a boiling tin bath by contact with zinc, pieces of which are suspended in the bath with the objects to be tinned. A bath for this purpose consists of 20 quarts of rain water, 28 drams of fused protochloride of tin and 7 ounces each of alum and pulverized tartar. These solutions must be boiling when used.

One of the best methods of tinning iron is to make up a solution of chloride of tin, almost exactly as ordinary chloride of zinc is made. Common block tin may be dissolved in hydrochloric acid, and if a little mercury is added it may be used for cold tinning.

Another rule is to use 1 part of tin to 2 of zinc and 6 of mercury. The mercury and tin, when mixed together, form a soft paste. The objects to be tinned should first be treated with potash to get rid of all greasiness, then moistened with hydrochloric acid. It is better to rub on the acid with a cloth or a brush. Cotton or similar fiber must be used for this purpose. Acid will quickly eat up any animal fiber, either woolen or bristles.

After the hydrochloric acid has been rubbed on apply a little of the tin paste described above and rub it over the surface with the same cloth used with the acid. The amalgam will spread itself over the surface and cover the iron and steel articles completely with a coating of tin.

Can You Make "N.R.A." Stand For "Now Really Alert"?

For a long time, we must admit, many of us were not really alert—and it can be truthfully said that there wasn't much reason much of the time.

But now things have changed — clear from Washington, D. C., to California, and many businesses are actually

"Now Really Alert"

to the business opportunities that are developing everywhere as a result of the N. R. A. activities.

"Now Really Alert" means that YOU are out actually DIGGING UP repair and replacement jobs covering everything from new gutters and downspouts to new smoke-pipes and furnaces.



Within a Mile of Your Shop N-eeded R-epairs A-wait

and if you haven't the necessary materials on hand, our Catalogue No. 49 tells you how to get them.

And Every Order You Give and
Take Helps the N. R. A. Get
Going Faster.

F. MEYER & BRO. CO.
PEORIA ILLINOIS
THE HANDY PIPE PEOPLE



—make your Registers
"GO TO BAT" for you!

FEWER and fewer registers are "just going along with the job" these days.

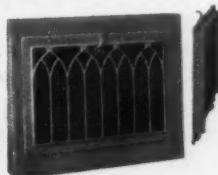
The smart contractors who are landing the sales are thoroughly conscious of the fact that superior registers make a mighty good sales feature and they are employing it to good advantage.

Try this new slant! Specify H&C registers and let them go to bat for you. You'll find that their obvious superiority makes a real impression on prospects—one that helps a lot in landing the job.

*Leading jobbers
carry complete stocks*



H&C the most complete line of fine registers anywhere.



No. 120
Baseboard Register

Newest addition to the H & C line. Made to be installed with the stack-head overlapping the frame.

The most popular T & B items are now a part of the H & C Line.

HART & COOLEY MFG. CO.

CAST AND
STEEL



WARM AIR
REGISTERS

GENERAL SALES OFFICE 51 W. KINZIE STREET, CHICAGO

Brooklyn, N. Y., 70 Berry St. Boston, 6 Beacon St.
Philadelphia, 1600 Arch St. New Britain, Conn., Corbin Ave.

ASSOCIATION

Activities

New England

The New England Associated Roofing and Sheet Metal Contractors and Fabricators is actively organizing throughout the entire New England district and new members are coming in daily.

Our code is, as yet, (Sept. 13) similarly indefinite. In drawing up our code we conformed very largely to that submitted by the National Association of Sheet Metal Contractors with the important exception that in the matter of maximum hours we preferred and adopted the corresponding paragraph of the Code of the Construction League of America. This latter code is now in hearings; it will be necessary for the code of the National Association to conform to it and our code to conform to that of the National Association.

In a telephone conversation with Washington Sept. 12 we were unofficially but authoritatively informed that the administration of the Sheet Metal and Roofing Industries would be by a group comprising the National Association of Sheet Metal Contractors and the two Roofers' Associations. We were also informed that it was at this time considered essential that the New England industrial area be administered by a New England Association and that our association would in all probability be designated as such administering agency. Any state associations that have expected to affiliate direct with the National Association will probably be informed that their affiliation should be through the New England Association.

H. L. Morse,
89 State St., Boston.
Secretary.

* * *

Chicago

The South End Employers' Club held its last meeting September 12th.

One of the important discussions centered around the Illinois Sales Tax. The association's attorney, Cornelius Palmer, reported that the latest available ruling is that the tax shall be applied to materials only. Contract work carrying both materials and labor should have the tax applied only against the materials used.

Products made up in the shop for retail sale, such as smoke pipe, carry only a tax on materials.

The amendment to the Chicago city ordinance covering permit to do heating work has reached the place where

the city council sub-committee will probably hear the amendment during this month. All furnace dealers are getting behind the amendment. The amendment reads:

(K) Permit

(1) It shall be unlawful for any person, persons, firm or corporation to construct or install any warm air heating furnace or appliances thereto in a new building or in a building which previously has had no warm air heating furnace or furnaces within the city without first obtaining from the Commissioner of Buildings a permit to do such work, for which said person, persons, firm or corporation shall pay to said Commissioner of Buildings for the use of said city, for each such furnace so installed or constructed the sum of Five Dollars (\$5.00).

(2) No heating permits shall be required for repair work, or replacing furnaces of not less capacity as the furnace sought to be replaced in the same location, or resetting old furnaces in the same location; or renewing of single warm air pipe lines in basement; but when additional runs of pipe or additional runs of stack are installed, a permit shall be required for which the person, firm or corporation installing said additional runs of pipe or said additional runs of stack shall pay to the Commissioner of Buildings, for the use of the said city the sum of One Dollar (\$1.00) for each out-let.

J. A. Miedema,
Secretary.

* * *

Memphis

The Memphis, Tennessee association is working closely with the NRA to establish a code of fair competition.

We are members of the National Association Sheet Metal Contractors and have sent in our code to them. Our Association will cooperate with the National Association and the NRA Code. Henry Noshey is president; O. H. Hendricks is Vice President; W. L. Eichberg secretary and treasurer.

We have a membership of 27 firms and all are very much encouraged over the prospects of the new deal.

Our heating business is picking up. Most all the new residences being built are using air conditioning for heating and it looks like hot water is doomed to go in this city.

W. L. Eichley,
Secretary.

* * *

Fulton Co., N. Y.

The Fulton Co., N. Y., Sheet Metal, Roofing and Warm Air Heating Contractors Association was organized about 3 months ago. The officers are: President, D. V. Quackenbush; Vice-president, Percy Lamber; secretary, Fred Chatterton; treasurer, C. M. Pickering; directors, L. Birdsley, L. Sothern, F. Bailey.

At this time the county is 100 per cent in the association; the members find business 100 per cent better since they have organized; they have done away with the cut throat and the shopper. They are also working with the plumbers of the county. They have developed a credit system which works wonders; all dead beats are turned into the secretary.

Every member of the county local is a member of the New York State Association. The next State Convention will be held in Albany in April, 1934, a location which the Fulton county members were very active in securing.

The president is also on the State Board of Directors, and also investigator for Fulton and Montgomery counties under the new code.

Every member is complying with the code and price schedule. The hardware stores and the chain stores have come up on their prices on metal goods, so they are selling for the same prices as the sheet metal contractor.

D. V. Quackenbush,
President.

* * *

St. Louis

The regular monthly meeting of the Warm Air Heating-Air Conditioning and Sheet Metal Contractors Association of St. Louis was held September 18 with between thirty-five and forty members in attendance.

The speaker of the meeting was Mr. Meehan of the Meehan Electrical Appliance Co., who spoke on the aims and purposes of the NRA. Mr. Meehan's talk was straight to the point and helped contractors get an insight on some of the problems and plans of NRA. Mr. Meehan emphasized the importance of universal and unselfish cooperation.

For St. Louis this means a strong local organization and a new start with new plans and aims in mind.

The association has taken in a number of new members recently and these new members were introduced. A committee was appointed to prepare resolutions covering ways and means of consolidating the work of the sheet metal, roofing and furnace industries.

H. Weis,
2737 Chippewa St.
Corresponding Secretary.

Association Activities

Indiana

Interest among the sheet metal trade in Indiana centers around the sheet metal codes. Several new local associations have been formed and are working on local codes. These local codes will be sent to the State organization for submission to the Administration through the National body.

The District Meeting at Columbus, scheduled for Friday, October 27th, will be devoted largely to Code questions. District Governor J. R. Everroad plans to have a speaker conversant with the National status to enlighten the guests on that phase of the matter. In addition to that the latest information and bulletins from the Indiana NRA office will be available.

The State Gross Income Tax is still a live and vital question. The Central Office of the Sheet Metal Contractors' Association has just been advised by the Gross Income Tax Division of the State that within the next three weeks they will have compiled statistics showing results of the July payment. Without revealing in any fashion the income of any particular firm or the amount paid by any taxpayer, these statistics provide an index to public conditions in all communities in the State. Membership can obtain through the Central Office full tabulations for any given community, or for any given group of taxpayers, upon request.

Paul R. Jordan,
Executive Secretary.

* * *

Milwaukee

On September 6 the Sheet Metal Contractors Association of Milwaukee held its monthly meeting. The NRA came in for considerable discussion even though the Wisconsin association has participated with the National and submitted a code with reservations to the National.

Definite report on the progress of the code has not been received as yet (Sept. 8).

The association has a membership drive on with the aim of getting in every possible contractor in Milwaukee and the county. Other discussions centered around trade and trade relation policies and unfair trade practices. Some suggestions along this line are expected.

The October meeting is expected to be one of the biggest and best of the year.

Paul L. Biersach,
2371 North Grant Blvd.
Secretary.

New York State

Rapid progress is being made in New York state in forming associations in communities where there never have been groups or where former groups have disbanded.

The state association is participating with the national association to advance the preparation and submittal of an industry code.

In the last month new local associations have been formed in Gloversville with D. V. Quackenbush as president. This local will include contractors from Amsterdam and Johnstown.

A second local has been formed in Schenectady with Felix Micheli as president and Adolph Fettig as secretary.

Albany and Troy have combined to form a third local with F. Kellogg as president and James Keays as secretary.

Adolph Hesse,
916 Columbia St., Utica.
Secretary.

* * *

Detroit

On August 28, 1933 a representative group of warm air and air conditioning contractors met to consider the advisability of organizing an association which would function under a code of fair competition. The fondest hopes of those who were behind this movement were more than realized when this group voted unanimously to organize.

A set of temporary by-laws which had been drawn, were presented and adopted. At this meeting temporary officers were elected, who will serve for three months. We thought it was a wise move to elect temporary officers as there were still a few contractors in the industry who were not present at the meeting and we felt that all of those who did join within a reasonable period of time should have a voice in the management of the association.

At our second meeting September 11, our membership was increased so that now we have fifty members. At this meeting were present a number of jobbers and wholesalers who asked that we make it possible for them to cooperate with us by instituting an associate membership, and a motion was carried to the effect that all wholesalers and manufacturers who do not engage in any retail business, may be eligible for membership as associate members.

Principle in our accomplishment has been the getting together of the association on a code of fair competition as far as cleaning, repairing and recementing of furnaces is concerned. On this we have arrived at rates both

on the labor and prices to the consumer. We have gone into this work carefully so as not to set rates to the consumer which are exorbitant, but we have arrived at figures which are sufficient to get away from these disasterously low prices which were due to the unfair competition.

In this accomplishment we have secured the co-operation of the jobbers not to sell at wholesale to the large real estate companies and management companies. We also have secured the consent of the jobber to work with us in establishing a list saying who the legitimate dealers in our local field are. Each jobber will have such a list which will be a protection against people not deserving of the wholesale price.

Albert C. Beck, Secretary,
166 East Jefferson Ave.

* * *

Our Code

(Continued from page 17)

ARTICLE VI.

General

Section 1. Adjustments—In the event that any buyer subject to this Code shall have contracted before June 16, 1933, to purchase goods, structures, or parts thereof at a fixed price for delivery during the period of the President's Reemployment Agreement, he shall make an appropriate adjustment of said price to meet any increase in cost to the seller caused by the seller's having signed the President's Reemployment Agreement or having become bound by any Code of Fair Competition approved by the President; provided, however, that in view of the fact that construction operations customarily involve the furnishing of various goods and structures, or parts thereof by a continuous series of independent long-term contracts and agreements at fixed prices between various parties, such as owners (including governmental departments), builders, contractors, subcontractors and others, such adjustments shall be contingent upon similar appropriate adjustments to be made by all other parties thus participating, from and including the initial vendor of such goods and structures or parts thereof to and including the owner of the works or structure upon which they are used.

Section 2. This Code is not designed to promote monopolies or to eliminate or oppress small enterprises, and shall not operate to discriminate against them, nor shall it be so interpreted or construed.

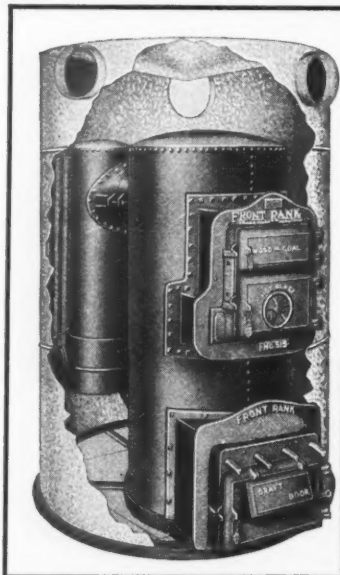
Section 3. The Standard Form of Contract Documents of the American Institute of Architects is recommended to be the basis to be used for all contracts.

Section 4. When methods of doing sheet metal work are not clearly shown on drawings or defined in specifications prepared by architects, it is recommended that methods shown in "Standard Practice in Sheet Metal Work," published by the National Association of Sheet Metal Contractors of the United States (Inc.), be used; for slate roofs, methods shown in the book published by the National Slate Association; for composition, or built-up roofs the specifications approved by the United Roofing Contractors Association of North America, and any other standards of practice as may be approved by the Code Authority Committee.

ARTICLE VII.

Effective Date

This Code shall become effective on the tenth day after its approval by the President of the United States, and shall be applicable to all work undertaken pursuant to contracts entered into or otherwise commenced after such approval date.



FRONT RANK
TRADE NAME REGISTERED

Where a thoroughly efficient steel furnace is desired the FRONT RANK meets the requirement every time. Models for the modest home or the more imposing one.

• MELLOW •

Every detail of construction contributes to efficiency and economy of operation. A cast iron furnace which assures 70° humid heat even in sub-zero weather.

NOW... a Complete Line of Cast Iron and Steel Furnaces by LIBERTY!

For years the MELLOW Cast Iron Furnace has built up a lasting reputation for its manufacturers and much better than the ordinary run of profits for the dealers who have handled it. And now, broadening our scope of service, we offer the FRONT RANK Steel Furnace, to complete a furnace line from which you can meet every warm air heating requirement.



It is to your advantage to handle an established line—to offer your customers a furnace that will operate economically and efficiently over a long period of service, with an original cost that is comparatively low. But it is also essential that this furnace allow you the greatest margin of profit. The Liberty Line now meets every one of these requirements.

We are anxious to tell you about our dealer proposition. Write today for the story which will put you on the road to real profits.

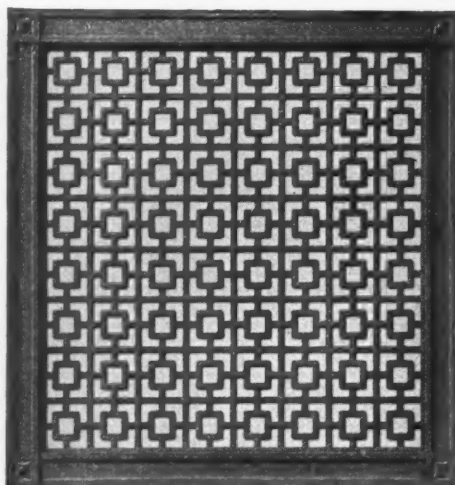
LIBERTY FOUNDRY CO.
ST. LOUIS, MISSOURI



PERFORATED METALS

for

EVERY PURPOSE



Send us your specifications for prices on any kind of Perforated Metal.

ARCHITECTURAL GRILLES

You will find our Grilles in modern Schools, Churches, Public Buildings and Homes. We have many beautiful designs from which to select.

"GRILFRAME" enhances the beauty of any design Grille by the addition of a border frame of steel. Write for detailed information.

SAFETY GUARDS—if made from our perforated steel sheets and according to our method are really safe.

PERFORATED METAL of every sort for all uses.

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5649 FILLMORE ST., CHICAGO, ILL., U. S. A.—NEW YORK OFFICE: 114 LIBERTY ST.

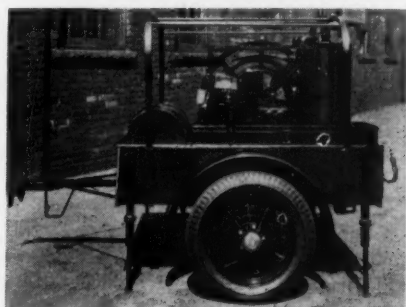
New PRODUCTS

Furnace Cleaner

A new furnace cleaner, of the trailer type, is announced by the Arco Vacuum Corporation (Division of American Radiator Company), 40 W. 40th St., New York City.

The two-wheeled trailer comes complete as a pneumatic-tired, wagon body unit with canvas roof supports and connection to attach the trailer to a truck or passenger car.

In the trailer is the vacuum machine and a gasoline engine. These



power units are rigidly attached to the floor of the trailer. The vacuum machine gets its suction from a positive displacement pump.

The dust collector and separator is a movable unit to be carried into the basement. A hose connects the separator with the trailer power unit and a shorter hose takes the attachments.

Standard equipment consists of two suction heads, combination handle and scraper, renovator, hand brush, flexible working tool and saw tooth tool, with necessary hose.

Literature describing and explaining the new unit may be obtained from the company.

Nickel Tin

Two new sheet materials—nickel tin and chrome tin—are announced by the American Nickeloid Co., Peru, Illinois.

The new materials are produced by the company's patented bonding process, whereby materials of different characteristics are bonded to give a sheet with two different facings.

The company also makes brass tin and copper tin. All four materials are said to be readily workable, durable, and can be soldered, stamped, formed and seamed. It can also be drawn moderately.

These materials are available in a full range of sizes and gages. The materials can be used for any fabrication process or in the manufacture of any specialty.

Samples of the material, together with information, will be sent by the company upon request.

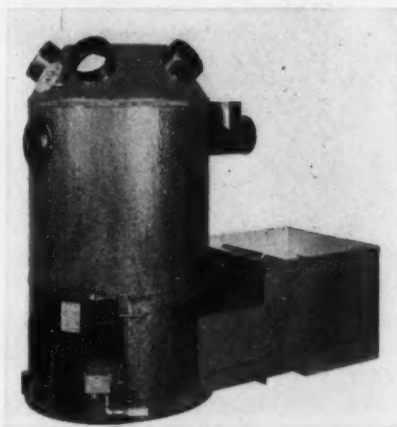
Conditioner

The Perfection Stove Company, Cleveland, Ohio, have placed on the market a new oil burning conditioning furnace incorporating a furnace capable of delivering 85,000 B.t.u. per hour at the register, a filter section, blower and automatic controls.

The burner used will burn as little as 1/10 gallon of oil per hour or as much as 1 gallon per hour. The burner used is the company's Superflex type.

An automatic humidifier of the dome type is used.

The furnace is furnished as a complete unit with the blower and filters housed for rear air delivery, proper



baffling, round casing finished in plum colored enamel.

Complete information on operating characteristics and prices may be obtained from the company.

New Tinning Stick

A new tinning stick entirely new in its action because it contains fluxing ingredients that will penetrate most any foreign surface such as rust, grease, paint, etc. and will lay down a perfect tin surface on all metals or their alloys without any previous prep-

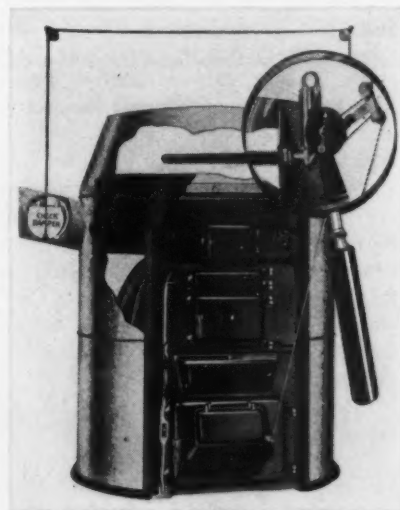
aration, is announced by the American Solder and Flux Co., Philadelphia.

The same product is also made in the form of a powder that may be used to recoat metal that has been welded and the coating burnt away by reason of the heat. It comes in four different brands: "A" for retinning, "B" for resoldering, "C" for releading, and "E" for regalvanizing.

The powder may be mixed with water and applied with a brush or it may be sprinkled on the surface to be coated and then heated. As the material contains its own flux there is nothing else to do but apply it to the surface to be coated and heated.

Heat Regulator

A new heat regulating and control device for warm air furnaces, invented by Fred M. Kern, Detroit, Michigan,



is entirely self-contained and so automatically controlled that it is instantaneous in its action.

The operating action is controlled by hydraulic pressure. A tube, with fin-like projections, which is filled with a special expansion fluid, acts the same as the fluid in a thermometer, and is inserted in the bonnet of the furnace hood. This fluid expands and contracts with the slightest change in temperature.

The temperature of the room is controlled in the hood of the furnace, rather than in the room itself. A graduated control is used, which meters the amount of air necessary.

New Products

Furnace Switch

A magnetic type of switch automatically compensated for wear, positive and quick acting on both make and break and actuated by a rugged bi-metal helix, heat treated, aged and calibrated is announced by Cook Electric Co., 2700 Southport Ave., Chicago.

The furnace setting is simple and can be done by the householder. The blower setting is easily made before installation, but after installation the lock screw is inaccessible, thus preventing tampering by the householder.

Three types are announced—type 15-6, a high fire switch, adjustable



range 100 to 350 deg. F., differential 15 deg. F.; type 15-7, a blower switch, adjustable range 100 to 300 deg. F., differential 35 deg. F.; and type 15-8, a combination furnace control incorporating both the 15-6 high fire switch and the 15-7 blower switch, and in addition is provided with a safety contact so that if the fire should fail to check for any reason whatever the blower will operate, regardless of the room temperature, thus tending to prevent damage to the furnace and also to warn the householder that the heating system is not functioning properly.

Information on the units can be obtained from the company.

New Emerson Motors

The Emerson Electric Mfg. Company of St. Louis, Mo., recently announced a line of high torque, capacitor motors.

These new motors follow closely the basic design employed in Emerson low torque, fan duty capacitor motors. Many refinements, however, have been developed.

In general, the motors provide the performance characteristics of a repulsion induction motor, plus added quietness and less complicated construction. Air gap tolerances and other precision refinements are closer than ever, brushes and commutators are eliminated, patented resilient spring

and rubber base mountings are employed to absorb vibratory noises.

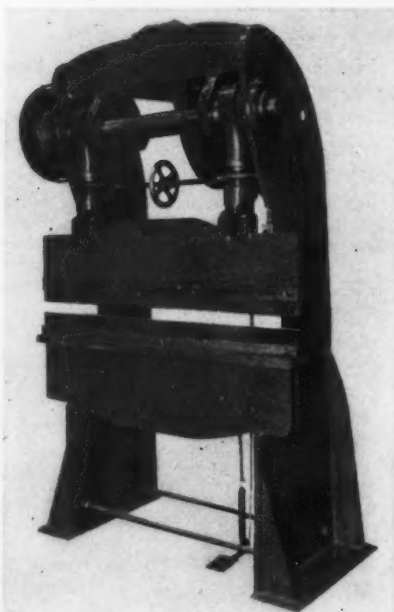
The new Emerson Capacitor Motors are available in sizes of $\frac{1}{8}$ to $\frac{1}{2}$ h.p. with resilient mountings; $\frac{1}{2}$ to $\frac{3}{4}$ h.p. with rigid mountings.

Details about the Emerson Capacitor Motor or further information can be obtained from The Emerson Electric Mfg. Company, 2018 Washington Avenue, St. Louis, Mo.

Allsteel Press

The Allsteel Press Co., 12015 South Peoria St., Chicago, announces a junior press brake for contractors who ordinarily use large power brakes to do light work.

The machine is designed to give



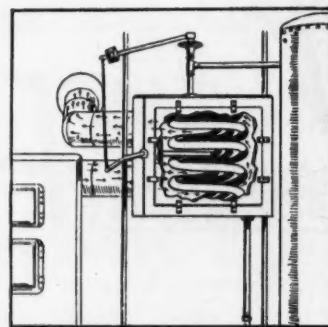
rapid, economical production of sheet metal parts requiring pressures up to 22 tons and 14 gauge.

Full specifications are contained in a leaflet which may be obtained from the company.

Water Heater

A water heater designed to utilize waste heat from the furnace smoke pipe has been placed on the market by Marcus Water Heater, 40 Paterston Plank Road, Union City, N. J.

The heater consists of a rectangular box which replaces a section of the smoke pipe. Inside the box there is a coil through which the water passes. Hot gases from the furnace enter the box through the smoke pipe and pass



out through another pipe connected to the chimney.

An automatic control maintains a constant temperature of the water, allowing it to get neither too hot nor too cold. This control operates off a line thermostat placed between the heater and the water tank.

Literature describing the unit has been prepared and will be mailed to any furnace man interested in giving his customers the type of hot water service claimed by the boiler trades.

Draft Gage

The Hays Corp., Michigan City, Ind., announces a complete line of compact electric contact gages for draft, pressure and differential draft or pressure in ranges between one-tenth inch water and 100 inches water and employing the Hays Dry type actuating unit.

These gages are offered for either



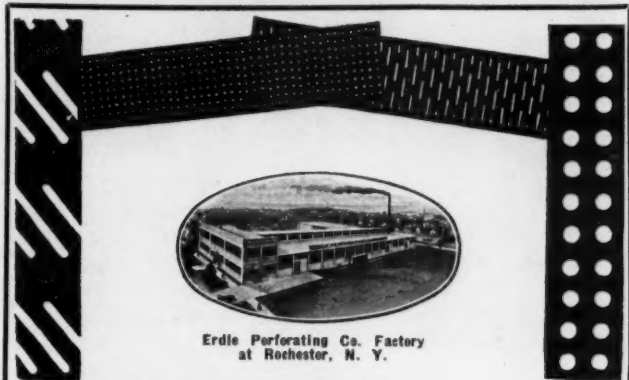
high or low contact service or for both, equipped with closed mercury switches or open contacts, depending on service conditions. A small cast aluminum case can accommodate either one or two single or double contact units or a single or double contact unit and a second unit which indicates on a three-inch scale the pressure or draft being measured. For differential draft or pressure the case is made air tight.

Check the **Vernois** Point by Point



The VERNOIS Furnace incorporates every feature that can be desired in a warm air furnace. Each of these features contributes, in a large way, to the remarkable efficiency and economy of operation which has been achieved in the VERNOIS. Check the Vernois point by point: ☐ Radiator... Cast in one piece. No angles, seams or joints. Radiation unhampered, combustion complete. ☐ Slip-on Front... Upper and lower fronts slip snugly into place over and around feed and ash pit sections. No inside joints. ☐ Ash Pit... Deep and roomy. Doors are amply large, facilitating ash removal. ☐ Duplex Grate... Basket type. Steel ball bearing mounted, it cannot stick. Ample space provided for draft. Removal of clinkers affects fire in no way. ☐ Feed Door... Sufficiently large, simplifying firing. Air-tight. ☐ Fire Pot... Two piece construction. Deep, lock cup joints. ☐ Combustion Chamber... Large, heavy, reinforced. Combustion is complete. ☐ Vapor Pan... Large, easily filled, maintains most comfortable humidity. ☐ Base and Ring... One piece. Correctly aligned, it may be quickly installed. ☐ Hot Blast Construction... Fuel is burned *completely*, eliminating waste. ☐ Simplified Assembly... Because each furnace is completely assembled at the factory, it sets up easily on the job. A big demand now exists for an *efficient* and *economical* furnace. Meet this demand with VERNOIS. Get complete details today.

MT. VERNON FURNACE & MFG. CO., MT. VERNON, ILLINOIS



PERFORATED SHEET METALS

A LUMINUM, Brass, Bronze, Copper, Steel, Zinc, Tin, Monel, etc. For Ventilators, Grills, Filters, Drainers, Screens, Strainers, Grain Sizing and Grading, Machine and Belt Guards, Conveyor Lining, Galvanizing Baskets, Drying Machinery and Coffee Roasters. Our 50 years' experience is your assurance of satisfaction. Send us your inquiries and let us quote on your requirements!

ERDLE PERFORATING CO., Rochester, N. Y.

ERDLE

There's Real MONEY for You on these Roofs

Paint the sheet metal roofs in your territory with Thompson's "370 SPECIAL RED" — it will do a job which will be completely satisfactory to your customers and which will put real money into your pockets.

Thompson's "370 SPECIAL RED" is a heavy bodied Red Oxide Paint especially designed for Tinnerns and Roofers and offers positive protection to all metal surfaces, especially those exposed to the elements.

Pure Red Lead, Spanish Sesquioxide of Iron and highest grade

Raw and Boiled Linseed Oil combine to make "370 SPECIAL RED" a paint which has extraordinary powers in resisting rust and corrosion.

"370 SPECIAL RED" is not just another paint, but a paint which gives you something to talk about to your customer—a fact which will go a long way toward getting the business for you.

Other Thompson Products are Alumbrite, the new Aluminum Paint for Wood and Steel and Lin-O-Jap, the Perfect Reducing Oil for All Paints.

THOMPSON & COMPANY
P. O. BOX 557, N. S. PITTSBURGH, PA.

"370 SPECIAL RED"
positive protection for Sheet Metal Roofs



"Does Armco Help? YOU BET!"

"I WAS trying to land a contract for the sheet metal work on two filling stations in this locality. I put in my bid with Armco INGOT IRON as I always do, and it looked as though I was going to lose out to a metal I knew wouldn't give the service required. So I wrote to Armco and they got busy with the oil company's chief architect in another city. Sure thing! I got the contract at a fair and profitable price. Armco not only makes an easy-working sheet that everybody knows is durable and money-saving but they also give a fellow a lift when he really needs it. Do you wonder why I'm for Armco a hundred per cent?"

THE AMERICAN ROLLING MILL CO.

Executive Offices: Middletown, Ohio
There's an Armco Distributor Near You



SHEET METALS
Create Profits
out of
Customer-Satisfaction

Every month "Ingot Iron Shop News" offers you ideas and suggestions on how to increase sales, cut costs, and turn out work that satisfies customers. Published for ambitious contractors by the Armco Distributors' Association. Write for your free subscription.

With Our Readers

A Masonry Cornice Falls

Louis Hirsig, President of the Wolff, Kubly and Hirsig Company of Madison, Wisconsin, sends us a photograph of a masonry cornice which fell recently in Madison, fortunately injuring no one, but focusing public attention on the constant danger to pedestrians from cornices of this type.

The photograph shows the masonry strewn across the sidewalk and out into the street and plainly indicates how little chance a pedestrian would have if caught under the wall as the masonry fell. The crushed mail box bears mute testimony to the killing qualities of these cornices.

The Capital Times, Madison newspaper, published a



photograph of the fall and in its accompanying story painted a strong picture of the danger. The paper said—"Two men narrowly escaped death when concrete blocks and bricks forming part of a cornice of the building at State, W. Johnson and N. Henry streets crashed to the sidewalk Sunday morning.

"Vibration of heavy machinery and the heavy traffic which passes is blamed by the police for the fall.

"The bricks and concrete fell just a few minutes before persons attending mass nearby left the church. Had the accident occurred a few minutes later, some church goers would undoubtedly been caught, police said."

Without seeking to inject fear, Mr. Hirsig called on the owner immediately, but on account of financial distress the owner could afford only a temporary covering but will replace with permanent materials later.

Mr. Hirsig reports that his firm took a copy of the photograph and called upon all the architects, calling their attention to this hazard. He reports that most architects were interested and will in the future employ sheet metal.

News Items

Selling with a Model Furnace

The interesting photograph accompanying shows a one-third size model furnace used by E. B. Goodwin, sales manager, Heating Division of the George Evans Corp., Moline, Illinois, to demonstrate the operation of the furnace.

The model is designed in true scale and is so mounted that it can be demonstrated mounted on the car as shown or taken off the car and moved into the shop or home.

Of interest is the fact that the model really works. Canned heat is burned in the fire box and the motor will



run the fan when connected into a light socket. A chimney is used for draft and heat is actually thrown off. Within five minutes the fire tubes get too hot to touch.

The furnace is an exact model of the company's oil burning air conditioning furnace and contains the furnace, filters, blower, etc.

Mr. Goodwin reports that he has carried the model all through the middle western states showing to dealers and home owners and that their reaction has been immediate and responsive. Home owners, especially, are interested because they can see just how the furnace operates.

Wm. O. Sheldon to Sell Machinery

Wm. O. Sheldon, for twelve years with the Yoder Company as sales manager, has resigned and established a distributorship representing several machinery builders. His office is room 903, Society for Savings Building, Cleveland.

Mr. Sheldon states that he will specialize in machinery for plate and sheet metal working, cold forming equipment, coiling and bending bar machines.

New Cleveland Shop

M. Guthoff has established a sheet metal and warm air furnace shop at 8930 Hough Ave., Cleveland.

Beh and Co. Moves Factory

Beh and Co., 230 Fifth Ave., New York, announce the removal of their factory from Dayton, Ohio, to Auburn, N. Y. The new plant is wholly owned by the company and is equipped with modern machinery for the manufacture of the company's line of adjustable register shields and radiator covers and enclosures.

VICTOR HEAT BOOSTER

ONLY
\$5⁹⁵
LIST

The ANSWER TO YOUR TOUGHEST PROBLEM!

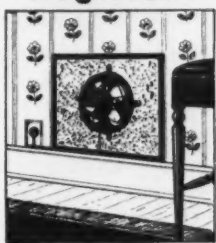
ROOMS that are hard to heat—the bugaboo of every furnace repairman—need never cause you any further worry. The new Victor Heat Booster solves this serious

HERE'S HOW IT WORKS



FLOOR TYPE

A Special Model for Wall Type Registers



only \$6⁹⁵
LIST

problem instantly! You simply install it in the register of the room that refuses to heat up—connect it to the nearest electric outlet and in a few moments the room is warm and cozy.

Every Home Needs at Least One!

You know that every furnace owner has at least one room that is hard to heat. That's why the Victor Heat Booster can be a real money-maker for you. A five minute demonstration in the home of your customers will bring you a lot of extra dollars and you can rest assured they'll be mighty pleased that you offered them this sure way to secure comfort!

Easy to Install!

Complete instructions for installing are sent with every booster. It takes only a few minutes and you can confidently tackle any job because we have both floor and wall type models adapted to take care of practically every situation. Get the complete facts on this new Heating Product—mail the coupon below, today!

VICTOR ELECTRIC PRODUCTS, INC.
700 READING ROAD, CINCINNATI, OHIO

Gentlemen: I am interested in your Victor Heat Booster.
Kindly send me complete information regarding this product

Name _____
Address _____
City _____ State _____

MAIL THIS COUPON TODAY!

Unsightly Ceilings Mean Money for You

Homeowners who have suffered the humiliation of unsightly cracked

Ceilings. These ceilings not only conceal cracked and fallen plaster . . . they actually *enhance* the appearance of the room.

Get your share of this profitable repair business.

Canton Steel Ceilings are sold through leading sheet metal jobbers in the United States.

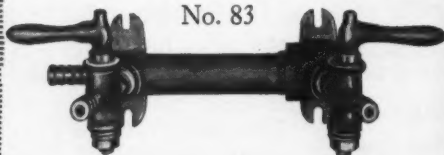


CANTON STEEL CEILING CO., CANTON, OHIO

FARNAN • QUALITY

Brass Distributing Pipe With 2 Cocks

No. 83



Every Part TESTED!

THE COMPLETE LINE

Quick Opening Bar Faucets
Draught Tubes and Tapping Bungs
Couplings for Faucets and Tubes
Distributing Pipes
Regular Brass Air Cocks
Water Stop Cocks
Connections
Overflows and Sockets
Tank Fittings
Ice Box Couplings
Brass Gauge and Regulator Arms
Beer Pipe Cleaner Couplings
Beer Pipe Cleaners

Before Farnan beer dispensing equipment is assembled each part is tested, and guaranteed for the service for which it is intended. A heavy coating of tin is applied to every part which comes in contact with the beer. The Farnan Line will meet every beer dispensing need.

The FARNAN BRASS WORKS Company
Manufacturers of
High Grade Brass Products
Established in 1852
1104 Center St. N. W.
Cleveland, Ohio

AN AID TO FURNACE INSTALLATION AND REPAIR PROFITS



Homeowners who, due to recent economic conditions, have been putting off furnace repairs and the installation of new heating plants, are finding they can no longer do so. Are you equipped to handle the portion of this business which will find its way into your shop? Because of its ability to cut accurately and quickly the Viking Shear will prove your greatest asset in this work. Your kit is not complete without

VIKING
SHEAR
COMPANY
ERIE, PA.

THE
VIKING
SHEAR

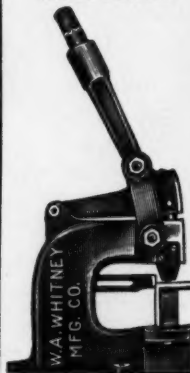
WHITNEY LEVER PUNCHES

No. 4B PUNCH



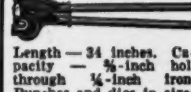
Length—8½ inches. Capacity ¼-inch through 16 gauge. Deep Throat—3 inches. Weight—3 pounds. Punches and Dies—¾" to 1½" by 64ths.

No. 91 PUNCH



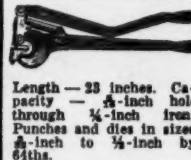
Capacity — ¼-inch hole through ¼-inch, 1-inch hole through ½-inch and 2-inch hole through ¾-inch iron. Depth throat 5-inches. Weight — 82 lbs.

No. 1 PUNCH



Length—34 inches. Capacity — ¼-inch hole through ¼-inch iron. Punches and dies in sizes from ¼ to 1½ by 64ths.

No. 2 PUNCH



Length—33 inches. Capacity — ½-inch hole through ¼-inch iron. Punches and dies in sizes ½-inch to 1½-inch by 64ths.

CHANNEL IRON PUNCH



Companion to No. 2 Punch. Every part of the two Punches interchangeable, including punches and dies. Capacity — ¼-inch hole through ¼-inch iron.

No. 6 PUNCH



Length—26½ inches. Capacity — ¼-inch hole through ½-inch iron; especially adapted for button punching or templet work. Punches and dies ¼" to 1½" by 32nds.

We have tools for every purpose needed by Sheet Metal Contractors.

Ask your Jobber



WHITNEY MFG. CO.
636 RACE ST. ROCKFORD, ILL.

News Items

Fabricated Metal Products Code Hearing

Deputy Administrator H. O. King sent out notices Sept. 20 for a public hearing to start Thursday, October 5, on a code of fair competition for the Fabricated Metal Products Manufacturing and Metal Finishing and Coating Industry. The hearing will be held in the auditorium of the Department of Commerce.

A proposed code prepared for the industry represents an attempt to bring under one basic compact more than 6,500 manufacturers and trade associations employing between 750,000 and 1,500,000 persons. The code was submitted by the Fabricated Metal Products Federation, claiming to represent 55 per cent or more of the widely diversified industry, and was worked out following a series of conferences held in Deputy Administrator King's office last month.

Main provisions of the proposed code are:

The industry is to employ no person under 16 in any phase of its operations, and no one under 18 in a hazardous occupation.

Minimum wages for processing employes are to be 35 cents an hour for males and 30 cents for females, unless the rates were lower on July 15, 1929, in which event the minima may be not lower than 30 cents for males and 25 cents for females. Beginners are to receive 80 per cent of the minima.

Office workers are to be paid minimum wages of \$15 per week in cities over 500,000, \$14.50 in cities between 250,000 and 500,000, and \$14 in cities between 2,500 and 250,000. In communities of 2,500 and under, wages are to be increased 20 per cent up to a minimum of \$12 a week.

Office boys and girls under 21 are to receive at least 80 percent of the minimum.

The code establishes a basic 40-hour work week, with 48 hours in rush periods. However, any employe may, at the request of his employer, work as many additional hours as he pleases.

The tentative code carries an "individual merit" clause respecting labor.

International Business Gains

International Heater Co., Utica, N. Y., reports increased business, necessitating a double shift in the factory to keep up with orders.

Irwin Sutphen Dies

Irwin C. Sutphen, age 52, manager of the New York office of Armco International Corporation and of the Dixie Culvert and Pipe Company, died at the Middletown (Ohio) hospital September 19 of a bronchial illness which vitally weakened his heart. He was on a vacation to his home and the general offices of the International Company when he was stricken.

He began selling ARMCO products in May, 1908, when he joined the Ohio Corrugated Culvert Company. In 1911 he joined the Dixie Culvert & Pipe Co. and sold the same products in the Caribbean district and Cuba until 1922, when he was transferred to New York as manager, a position he held until his death.

He was widely known in the export field.

He is survived by his mother, Mrs. Harriet Sutphen, and one brother, Fred G. Sutphen, enameling consultant for ARMCO.

UNQUESTIONABLY the Most Efficient



SAVONIUS

"S"

ROTOR VENTILATOR and SMOKE COWL

PLENTY OF NEW BUSINESS awaits the enterprising contractor—with the new S Rotor Ventilator, and not alone on new construction but in replacing old, inefficient and worn out ventilators.

Every factory, foundry, warehouse, garage, chemical plant and residence is a real prospect, as well as the Architect and Engineer.

The S Rotor Ventilator is a combination of the famous Savonius Wind Rotor and a special centrifugal fan. It is positively the most efficient wind ventilator available today. It operates constantly and silently in wind velocities of less than 2 miles per hour in all weather; heat, cold, rain, sleet or snow.

It is strongly constructed of non-corrosive metal and rotates on grease-packed S. K. F. ball bearings, fully protected from the action of moisture, salt air, smoke, fumes and gases.

The greater suction action of the S Rotor Ventilator permits substitution or replacement of electric power ventilators in many cases, a great saving in first cost and operating expense.

The S Rotor Smoke Cowl is positive in action, increases draught and makes back draught action impossible.

The market for this new and decidedly superior ventilator is large, and new profits and customers are obtainable throughout every community. Write for prices and complete information—Today.

UNITED STATES VENTILATOR AND POWER CORPORATION

Sole U. S. Licensee
184 SUMMER STREET

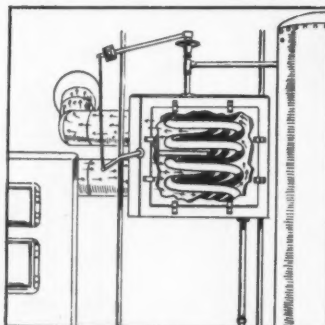
Savonius Patents
BOSTON, MASS.

The
AKRON Air Blast FURNACE

The
SOLID COMFORT FURNACE



● The MAY-FIEBEGER Company, Newark, Ohio ●



PATENT PENDING

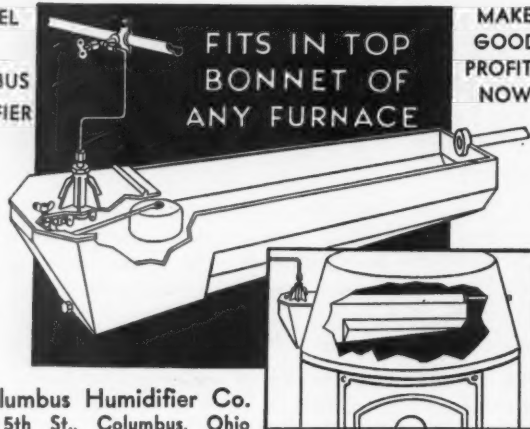
**MARCUS
Smoke Stack
Water Heater**

Supplies hot water from a warm air furnace. Utilizes the waste heat that goes up the chimney. Has an automatic control which assures an even temperature of the water.

Agents Wanted

MARCUS WATER HEATER
40 Paterson Plank Road, Union City, N. J.

MODEL
"C"
COLUMBUS
HUMIDIFIER



FITS IN TOP
BONNET OF
ANY FURNACE

MAKE
GOOD
PROFITS
NOW

Dealers
Write
Today

The Columbus Humidifier Co.
154 N. 5th St., Columbus, Ohio

"FABRIKATED"

COLD AIR FACES

Floor Registers
Forced Air Registers

**82%
OPEN
AREA**

ANY SIZE . . . ANY FINISH

May we send Catalogue?

INDEPENDENT

INDEPENDENT REGISTER & MFG. CO.
3741 East 93rd Street . . . Cleveland, Ohio

News Items

F. Meyer and Bro. Co. Under NRA

George Harms reports that F. Meyer and Bro. Co., Peoria, Illinois, have signed the blanket code and is complying with all regulations of the Blue Eagle. The company has also applied for membership in the code for the furnace pipe manufacturers.

The company has reduced hours of work, added many new employees and exceeds code wage rates. An announcement to this effect has been mailed to the trade.

Roger Williams Talks on Accident Prevention

Roger Williams, vice president in charge of production for the Richardson and Boynton Co., gave a radio talk over station WNYC in conjunction with Governor of New York's Labor Union Safety Committee.

From years of experience with the R and B company Mr. Williams presented a psychological approach to the subject of educating factory workmen to develop and adopt measures for accident prevention.

Mr. Williams offered suggestions on executive cooperation with safety movements, itemized common causes of accidents, talked about carelessness, and pointed out the value of cooperative competition in eliminating accidents.

New Indiana Shop

In DeMotte, Indiana, Wm. H. Bahler has opened a new shop to do all kinds of sheet metal and furnace work. A newspaper story and advertisement were used for the announcement.

Black & Decker Business Gains

The Black & Decker Manufacturing Company, manufacturer of portable electric tools, since turning the corner in April of this year, has shown a consistent monthly increase in volume and earnings, although normally August is one of the duller months of the year.

Employment has increased 127 per cent since the turn in April and all classes of employees are working shorter hours and at a higher rate of pay.

The bank loans of this company as of January, 1931, totaled \$1,870,000.00 and are today \$672,979.66.

A conservative program of product improvement and introduction of new items has been adopted by the management.

Motor Wheel Appointments

M. F. Cotes, manager of the Heater Division of Motor Wheel Corporation, has announced the appointment of George H. Phillips as service manager of this division of MW. Mr. Phillips succeeds A. E. Nussdorfer, former service manager, who is now acting as assistant engineer in the MW Heater Division Laboratories.

Mr. Phillips comes to this new position with a background of many years' experience in service work. For the past year he has acted as service engineer for Motor Wheel in the East.

Adolf Frantz of the MW Service Department has assumed Mr. Phillips' former duties as service representative in MW's eastern territories.

News Items

Hardware Convention

The National Hardware Association of the United States and the American Hardware Manufacturers' Association will hold their annual convention jointly at the Palmer House, Chicago, October 16 to 19, inclusive.

Convention headquarters will be on the fourth floor of the Palmer House. Special railroad and hotel rates have been secured. The principal feature of the program will be the NRA, and a large attendance is anticipated.

New Cleveland Shops

The Altos Sheet Metal and Roofing Co. has entered the Cleveland field and opened a shop at 1435 St. Clair Ave. P. O. Olson, formerly of the Olson Sheet Metal and Roofing Co., heads the new company.

John T. Murphy, formerly manager of the east side branch of Donnelly Tanners, has taken over the business and will operate a sheet metal and furnace business under the name The Murphy Tanners. The address is 11510 Superior Ave., Cleveland.

Shop in New Quarters

"We Repair the Worst and Sell the Best" is the catchy slogan of the General Sheet Metal and Heating Co., Cleveland. The company has recently moved into larger and more attractive quarters at 3307 Superior Ave.

L. F. Curtner is head of the firm.

New Ohio Shop

O. L. Stewart has opened a new shop in Rising Sun, Ohio, to do general sheet metal and welding work. His shop is located on the "Bates property." Newspaper advertisements were used to announce the opening, and guttering, spouting, welding and roofing will be solicited.

Extras Booklet

The Inland Steel Company, Chicago, has just published a new booklet on bars, shapes, plates and semi-finished steel entitled: "Sizes We Roll and Standard Extras." It incorporates all the up-to-date changes in extras. It also includes tolerances, and size data on the products of Inland's bar, plate and structural mills. This edition is of a new and larger size—3½x8½ inches.

Gar Wood Folders

The Gar Wood Boiler Division of the Wood Hydraulic Hoist and Body Co., Detroit, Mich., have issued two leaflets relating to their new oil burning heating system.

One of the leaflets—Building Up Health—describes the indoor conditions home owners would like to have and gives some detailed information on the importance of combatting dry, dirty, stuffy air with suggestions on how Gar Wood equipment overcomes these conditions.

The second leaflet stresses the health angle with additional information on the benefits of modern equipment. Copies of these leaflets will be mailed to contractors.



New
Central

**BEER
TAP**

A NEW tap designed for quick and easy operation. Both the oversize winged handle, which operates bushing clamp, and lever handle are readily worked by hand—no tools needed. A rugged, solid fitting—nothing to get loose or out of order. Fits standard bush. Thomas check valve. This Central Tap performs all functions of an ordinary tap with greater ease of operation.

The complete Central line of Beer Faucets, Water Faucets, Taps, and other Bar Fittings is shown in Catalog C. Write for it.

THE CENTRAL BRASS MFG. CO.
2953 East 55th St., Cleveland, O.

CENTRAL
Quality Fittings

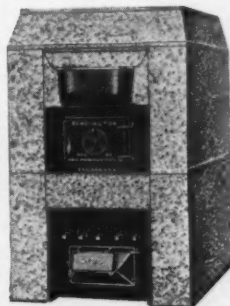
H E S S



**AIR CONDITIONERS
BLOWER FILTER UNITS**

WELDED STEEL FURNACE
◆ DISTINCTIVELY DIFFERENT ◆

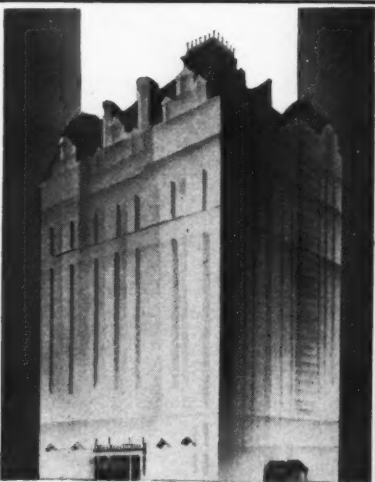
Receiving exceedingly favorable acceptance from people from every state, at Home Planning Hall, World's Fair. The Hess Line will make better profits for dealers and is easier to sell.



◆
**WRITE TODAY
FOR DEALER
PORTFOLIO
DESCRIBING
COMPLETE
HESS LINE**
◆

WELDED STEEL BENEFACITOR FURNACE OFFERS MORE
REAL QUALITY—AT A LOWER PRICE—WE BELIEVE—
THAN ANY OTHER FURNACE

HESS WARMING & VENTILATING CO.
1201-1211 S. WESTERN AVE. CHICAGO, ILL.
ESTABLISHED OVER 50 YEARS



truly
The
Bellevue-Stratford

is a home-in-Philadelphia . . . not only for those who enjoy residence here the year 'round but as well for the many who return to the Bellevue again and again. In the heart of the business and financial district, only a few minutes from the best in concerts, plays, football—the Bellevue-Stratford combines accessibility with quiet luxury. . . . May we offer you Bellevue-Stratford hospitality? . . . at 1933 low prices of course.

CLAUDE H. BENNETT, General Manager.

PHILADELPHIA

**The most complete work of its kind
ever offered the Building Industry**
STANDARD PRACTICE
in
SHEET METAL WORK

Compiled by National Association of Sheet Metal Contractors for Sheet Metal, Roofing and Warm Air Heating Contractors, and for Architects and Engineers.

Section I—Roofing, Gutters, Flashings Corrugated Iron Work
Section II—Skylights and Ventilators
Section III—Metal Cornices
Section IV—Metal Ceilings
Section V—Warm Air Furnaces, and including 6th edition of Standard Code
Section VI—Heating and Ventilating Systems
Section VII—Blow Pipe and Exhaust Systems
Section VIII—Fire and Kalamein Doors—Recommend. of Nat. Bd. of Fire Underwriters
Section IX—Hollow Metal Doors and Trim
Section X—Hollow Metal Windows
Section XI—Restaurant, Kitchen and Hotel Equipment
Section XII—Protective Coatings and Paints

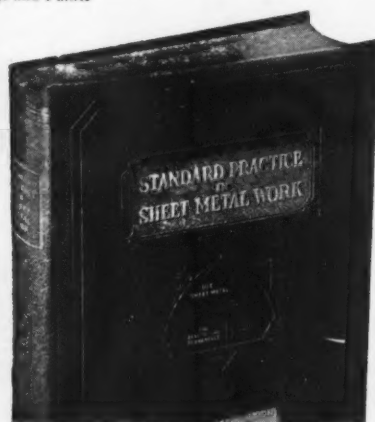
768 Pages, 9x12 Inches

494 Full-page
Illustrations

\$10 PREPAID

Send check with order, with the understanding that if you're not satisfied the book may be returned within ten days and your money will be refunded.

AMERICAN ARTISAN, 1900 Prairie Ave., CHICAGO, ILL.



New Literature

Fox Literature

Fox Furnace Company, Elyria, N. Y., has issued four new heating booklets. The largest booklet—Climate at Home—is a presentation of air conditioning for the home owner. Text and illustrations are in colors and the booklet should attract favorable comment. The text deals with—What Is Air Conditioning, Comfortable Warmth, Forced Air, Humidity, Cleaning, Ventilation, Cooling, followed by descriptions of several Fox furnaces and views of typical installations.

Modern Heating, the second booklet, presents practically the same material, but shows more owner pictures and some of the smaller furnaces.

Two leaflets give complete information on the gas fired and coal fired conditioning furnaces. Complete descriptions and views of the furnaces and their construction, full details of all accessories like fans and filters, discussion of controls, and tables covering sizes, ratings, capacities then follow.

Copies of all these booklets can be obtained from the company.

Ventilating Fan Leaflet

A leaflet furnishing characteristics of the new ball bearing, square frame, round frame fans and the louvers manufactured by International Engineering, Inc., Dayton, Ohio, has been prepared and will be mailed contractors.

The leaflet gives in tabular form the operating data of the fans.

Filter Leaflet

Kleenaire Filter Co., Stevens Point, Wisconsin, has published a one-page leaflet explaining the features of the company's Type D air filters.

Sizes, costs, ratings are contained. Construction features are also given.

Contractors can obtain copies by addressing the company.

Rust Resistance Bulletin

Republic Steel Corp., Youngstown, Ohio, through the metallurgical department has issued Bulletin 15 to clarify the phrase "rust-resistant."

The bulletin states that Toncan iron is not "stainless" and that staining will occur and should be taken as evidence that deterioration has set in. Staining, states the bulletin, is the first step of attack, followed by rust and failure. It is further stated that rust resistance does not require surfaces which will not oxidize, but surfaces which are slow to oxidize.

Copies of the bulletin can be obtained from the company.

Combustioneer Leaflet

Two leaflets showing the Furnastoker and Furnastender manufactured by Combustioneer, Inc., Springfield, Ohio, can be obtained from the company.

The leaflets contain complete information on the design and construction of the units, give all principal dimensions and the operating characteristics.

New Literature

Engineering Data Sheets

A new set of engineering data sheets, one for fan blast heating and the other for calculating the cooling load has been prepared by Dail Steel Products Co., Lansing, Michigan.

The sheet for fan blast work is a revision and improvement on the one used for the past two years. Its use has been simplified and the data it contains has been brought up to the latest information available, both from the 1933 A.S.H.V.E. Guide, the new Fan Blast Code adopted by the National Association, and other sources.

The data contained in the cooling sheet has also been obtained from the same sources, but the plan of filling in differs somewhat from that of the heating sheet. This data is based on a predetermined temperature and humidity condition, as explained in the heading, and instead of using the various coefficients of heat transmission with the varying temperature rises, factors to fit this arbitrary condition have been used. This eliminates considerable calculating on the part of the user and makes the calculation much easier.

The predetermined condition selected has been chosen because of its adaptability to almost any territory, and because it is the one used by a majority of air conditioning engineers.

The forms of both sheets are original with the company and in releasing these sheets for distribution to the general trade, the company hopes it may render a contribution to better heating principles and to the warm air industry.

These sheets will be available to dealers or installers, in blocks of 50 or more, at a nominal charge, and with each order the company will also furnish a blue print of a fan blast installation, a trunk schedule showing sizes of all branches, sections of main trunk, and both warm air and return air grilles, as well as a data sheet filled in to cover the layout. Dealers will then be able to check with this on any points that may not be entirely clear to them.

H. & C. Catalog

A new pocket catalog, just issued by the Hart & Cooley Mfg. Co., 61 W. Kinzie St., Chicago, shows all the leading items in the H & C line and also illustrates the popular items from the T & B line, which have now been added to and become a part of the H & C line.

Pages 23-24 are devoted to forced air registers illustrating the new sidewall register with extension arms which makes blocking no longer necessary.

The catalogue also illustrates the leading items in the line of furnace accessories, including automatic heat control, dampers, damper clips, chain, pulleys, damper regulators, etc.

Copies of this pocket catalog are being mailed to 12,000 dealers and to all jobbers. Additional copies will be furnished to anyone interested.

Oil Furnace Folders

The George Evans Corp., Moline, Illinois, will mail to contractors copies of their new folders describing the oil burning gravity and forced air furnaces recently placed on the market.

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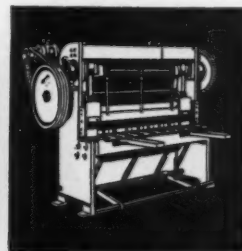
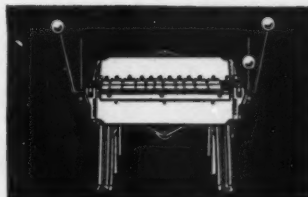
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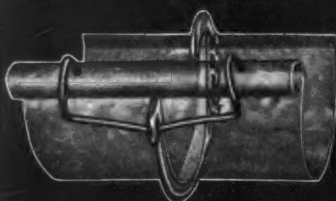
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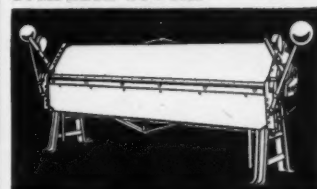
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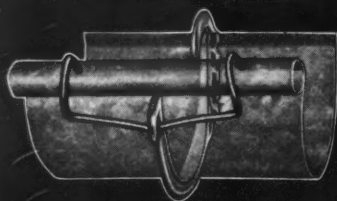
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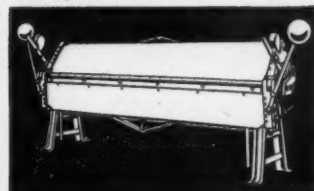
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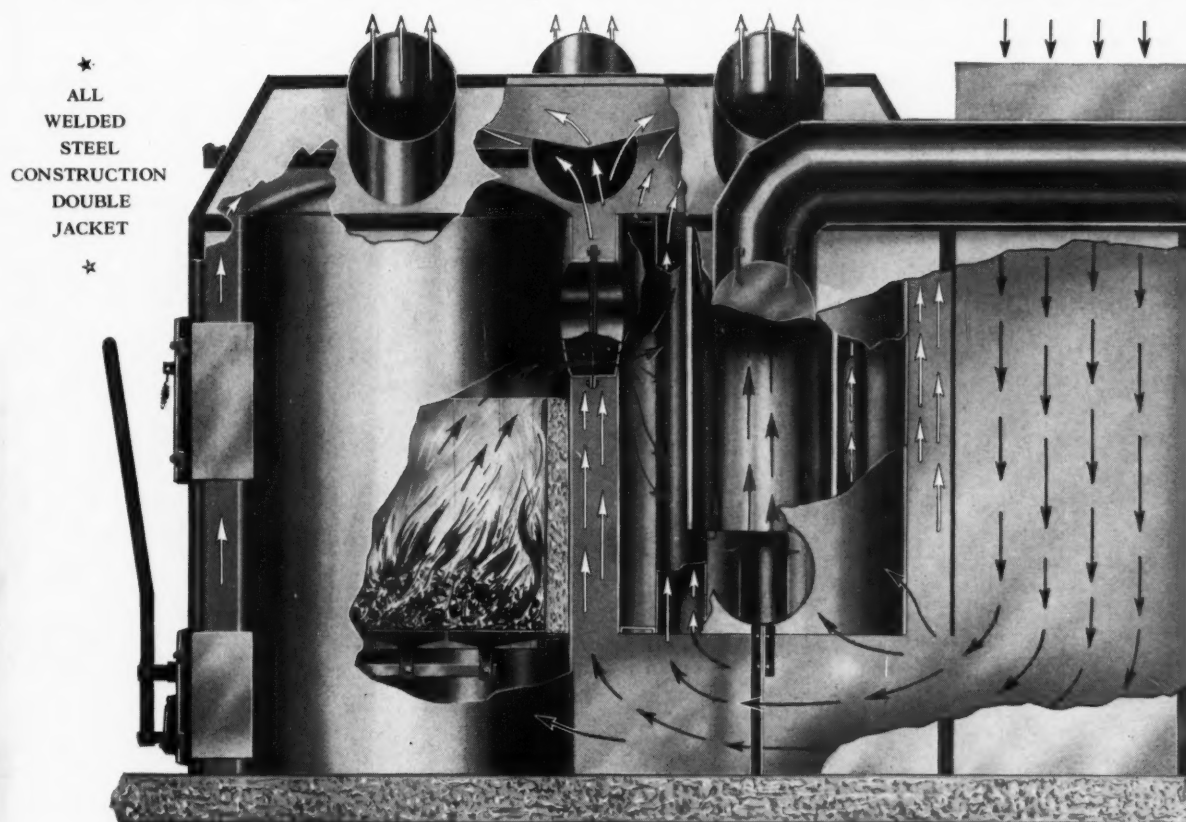
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AMERICAN STEEL & WIRE CO., Chicago ILLINOIS STEEL CO., Chicago, and CARNEGIE STEEL CO., Pittsburgh NATIONAL TUBE COMPANY, Pittsburgh

When in Chicago, visit the exhibits of Subsidiary Manufacturing Companies of United States Steel Corporation
GENERAL EXHIBITS BUILDING — A CENTURY OF PROGRESS EXPOSITION